NATIONAL PETROLEUM NEWS

Code of Marketing Practices Endorsed By Petroleum Institute

By V. B. Guthrie
N. P. N. MANAGING EDITOR

CHICAGO, Dec. 6

HAVING gingerly wiggled its toes in the water a year ago, the American Petroleum Institute took the full plunge and drafted and endorsed a code of oil marketing practices at its meeting here.

Now the institute has struck out vigorously for that shore, or goal, which might be called the adoption of the code by all marketing companies in the country, large and small, under the paternal supervision of the Federal Trade Commission.

The next procedure, like that followed by other industries in their relations with the federal trade body, is for the institute to submit to it the code as drafted and endorsed at its meeting here. Unofficially the commission knows in general what is in the code and is in sympathy with the effort to define and enforce what are good marketing principles.

However, the full code must now be officially placed before the trade body. The commission will then call what it terms a "trade practice submittal conference." This will likely be held at Washington in the not far distant future.

Every individual in the marketing branch of the oil industry who is sufficiently interested will be invited to attend this conference. If the desire of the majority in this branch of the industry, as expressed at this Washington meeting, is in favor of the code as it now stands, the Federal Trade Commission will then submit it to examination to determine if any of its provisions are a violation or modification of existing federal statutes relating to prices, methods of competition and so on, or are a violation of well established law as interpreted by the courts.

This step taken, the commission will then submit its comments on the code back to the companies over the country engaged in the wholesaling of petroleum products, and ask for a written statement from each company as to whether it intends to follow the practices defined in the code.

If from 80 to 85 per cent of the companies in the business so state their intention, the Federal Trade Commission declares the code in effect. Then, when some company is conclusively shown to be in violation of its provisions, the trade body can issue an order calling on that company to desist from this practice. If the violation continues the commission can go into court with the matter. This last step has seldom been taken, it is said, in the commission's relations with other industries.

While opinion at the institute's meeting here is divided as to the merit of various sections of the code, most persons believe it is a "step in the right direction" and likewise an important step for the institute to take in sponsoring the code.

The institute a year ago gave its first consideration to marketing problems. Now it is engaged in as important work for this branch of the industry as for the producing or refining branches.

THE principal points in the code that struck sparks of opposition were the provisions relating to the terms on which gasoline pumps could be put out in the future, on how competition in violation of terms of the code could be met and about the handling of the so-called commercial accounts.

As originally drawn the code stated that companies that subscribed to it could meet competition in violation of its terms only after being given authority in any specific case by the Federal Trade Commission. Col. R. W. Stewart, chairman of the board, Standard Oil Co. of Indiana, stood out against this provision in the consideration of the code by the institute directors before it went before the general institute meeting. He stood firm in the right of his company to meet such competition without waiting until the federal trade

High Points at Chicago

IN ADDITION to drafting and endorsing a code of marketing practices at the meeting of the American Petroleum Institute, Chicago, Dec. 4-6, other features of the meeting were:

Discussion of the relation of the new oil finds in this country to the continued stability of the oil producing industry. (Page 33)

Bringing out of facts tending to show that refiners are forced to spend many millions needlessly each year in treating their gasoline because of the unduly low allowable sulfur content in present specifications. (Page 31)

First reports on the great losses caused the refining industry through corrosion. (Page 27)

Address of Sir John Cadman, chairman Anglo-Persian Oil Co., England, on "Petroleum Problems outside the United States." (Page 35)

The new president of the American Petroleum Institute, E. B. Reeser, elected at the meeting in Chicago to succeed E. W. Clark, vice-president of the Union Oil Co. of California.

Mr. Resser is president of the Barnsdall Corp., and maintains headquarters at Tulsa. He has been an active figure in the conservation program in that territory.

(*Continued from Page* 17)

body had granted permission or perhaps denied it, or defined just how it should be met.

As a result a compromise was effected, by which the company offended against is to report violations to the chairman of the regional marketing committee of the institute and may take such steps to meet the competition as are approved by him; but it is also to make and prosecute complaints against violations with the Federal Trade Commisison.

THAT section of the code stating how gasoline pumps may be put out was the source of much argument both in the board of directors and in the general institute meeting.

The code, as finally drawn, states, as a general principle, that gasoline pumps and tanks cannot be given away, or leased or loaned for nominal amounts. Only in those states in which the giving away practice is now followed, and only until it can be discontinued by all companies, pumps and tanks and motor oil and grease dispensing outfits may be loaned or leased for the exclusive storing and handling of the products of the lender or lessor; but the agent to whom they are given is not to be bound not to handle products of other oil distributing companies in other equipment.

In general, for equipment going into new locations, or for additional equipment going to existing locations, the dealer or agent is to pay the oil company the actual cost of installing the equipment.

At the general meeting, the Transcontinental Oil Co., through its counsel, J. C. Adams, Tulsa, stated it would be unable to support the code because of this provision, which Mr. Adams stated gave the larger companies a great advantage in that they were left with their present large number of pumps already installed; while the smaller companies, now building up their gasoline business, were forbidden to follow the same method of giving away dispensing equipment.

Mr. Adams asked why the provisions could not be made all-inclusive and dealers and agents made to pay for pumps and tanks already installed as well as for those which would be put in in the future.

The big guns from the institute forces in support of the code were trained on Mr. Adams and the six or eight Transcontinental executives who sat with him in the meeting. Roy B. Jones, Panhandle Producing & Refining Co., institute director and general chairman of the institute code committee, and P. M. Miskell, Empire Oil & Refining Co., Tulsa, also an institute director and active member of the code committee, debated the issue from the platform with Mr. Adams.

They pointed out that a compromise had been made to meet this criticism of this provision of the code and that, where one oil company could persuade an agent or dealer to throw out the products, and consequently the dispensing equipment, of another oil company, the equipment of the oil company getting the business could be "exchanged" for the existing equipment on the location without cost to the company getting the business.

However, Mr. Adams and his cohorts stood out against all attacks of oratory and logic and went down in the final vote with their colors flying. Their minority of 8 was all the vote against endorsement of the code by the general meeting, while 106 of those present voted in favor of its endorsement.

The third provision in the code which drew forth considerable discussion referred to commercial accounts. The practice of granting price concessions, in either tank wagon or service station deliveries, under the guise of the account being that of a commercial consumer buying in sufficiently large quantities to entitle him to a discount from the price charged the individual consumer, is discontinued as a general practice. It may still be followed in sections where it is now in vogue but only on written contracts on charge accounts.

A COMMERCIAL account is defined as "a person, firm or corporation engaged in transportation of passengers, merchandise, freight and express, with vehicles, and properly licensed by public authorities for those purposes."

Prior to this general meeting of the institute, the code of marketing practices had been drawn up by regional committees in six principal marketing districts of the country, then pieced together by the general code committee and sent back to the regional committees for their criticism.

The general committee met in Chicago before the institute meeting and redrafted the code. Then it was passed to the board of directors. They worked upon it until 20 minutes after the time at which it was scheduled to be introduced for discussion at a general institute session.

After a crowd of 300 or 400 had waited 20 minutes, the code was borne in triumphantly by General Chairman Jones and W. R. Boyd, Jr., executive vice-president of the institute, a new title entailing additional responsibilities granted Mr. Boyd at this meeting. The code was announced as having just been passed by the directors unanimously. It was written on several pieces of paper. While Mr. Boyd and Mr. Jones put it together in proper order, George S. Davison, president of the Gulf Refining Co. was called on to speak in its behalf.

"I think the result of all this work that has been completed in the last 20 minutes is the most important step ever taken in our industry," said Mr. Davison in concluding his remarks. He pledged his company to stand by the code and do everything possible to maintain it as firmly as it is now drawn, with the thought that it might be improved in the future.

Then the code was read to the audience by Mr. Jones. The meeting was then adjourned until evening so that copies could be made so that every person interested could have one. In the evening Mr. Jones read the code, section by section and the audience was urged to feel free to state its objections on any and all points.

The first section to draw any discussion was that covering terms under which pumps and tanks may be put out in the future. As previously stated Mr. Adams voiced the objection of his company to this section.

C. B. Ames, general counsel of The Texas Co., spoke in favor of the code. So did H. T. Klein, an attorney for The Texas Co., who participated in evolving the Virginia code a year ago. J. F. Adams, Wadhams Oil Co., Milwaukee, drew out Mr. Jones to make a detailed interpretation of Rule 4, having to do with price allowances made for advertising. Mr. Jones replied that the language of the code meant specifically that allowances made by seller to buyer in return for advertising must be spent for advertising by the buyer and not pocketed as a price concession.

Paul Hadlick, secretary of the Minnesota Petroleum Association, drew from the chairman an account of what procedure would be followed in getting the code into effect in the industry.

In the discussion of Rule 9, W. C. Platt, editor of NATIONAL PETROLEUM NEWS, asked the chairman to explain where the refiners would post their tank car prices. Mr. Miskell answered the posting would be at the refineries.

H. J. SCOTT, Transcontinental Oil Co., Tulsa, precipitated considerable discussion in regard to the welfare of private filling station owners and their predicament in handling commercial accounts under the terms of the code. His question was answered with the interpretation that, even if a dealer gives price concessions to commercial accounts, the refiner or jobber is not to offset that concession by corresponding concessions to the dealer.

E. T. Wilson, Continental Oil Co., Denver, a member of the general committee, made a short talk in favor of the adoption of the code at the close of the discussion, just before a vote was taken. It was early apparent that there would be opposition to the code's adoption so the vote was taken by the raising of hands.

Complete Text of Institute Marketing Code

PREAMBLE

Competition in marketing refined products of petroleum has developed practices which are neither fair to the industry nor to the consuming public. The industry is entitled to a reasonable profit; and the consumer is entitled to a fair price, adequate service and products of good quality. The law does not permit competitors in the industry to agree upon prices, but it does prohibit unfair methods of competition. In order to more adequately define what are fair and unfair methods of competition, the American Petroleum Institute submits to the petroleum industry the following Code of Practices for Marketing Refined Petroleum Products, with the recommendation that it be approved and promulgated.

The refined products hereinafter referred to are gasoline, kerosene, automotive oils and greases.

FIRST

Loaning or Leasing Equipment

Rule 1. The practice of loaning or leasing gasoline pumps, tanks and other equipment is unsound and uneconomic and should be discontinued at the earliest possible moment consistent with existing conditions. Until such time as this situation can be brought about, and only in those states in which the practice is now observed, gasoline or kerosene pumps and tanks, motor oil equipment and grease outfits (the grease outfits not exceeding in cost $50 each) may be loaned or leased for the exclusive storage and handling of the products of the lender or lessor, but the borrower or lessee shall not be prohibited from handling in other equipment the products of another supplier. Where no equipment is at present installed by any company or where additional equipment may be added to existing locations, the borrower or lessee shall be required to pay for the installation of each loaned or leased equipment the actual cost of installing said equipment, and for this purpose shall make a cash deposit of at least $100 in advance for each underground unit to be installed, and shall pay as or when due all privilege taxes attaching because of the installation or maintenance of such equipment.

On account of the special nature of service required in supplying petroleum products to airports, no dispensing or storage equipment of any kind shall be leased, loaned, or otherwise furnished, to airport operators or resellers of petroleum products, except at full cost, including cost of equipment and storage installation.

Rule 2. A lender or lessor of such equipment shall neither extend credit to the borrower or lessee for installation costs, nor advance money to him to cover payment of privilege taxes, or any other expense in any manner related to the installation of loaned or leased equipment.

It is not the intention of Rules 1 and 2 to require the payment of installation costs from the borrower or lessee for exchanges in existing equipment on locations where gasoline, kerosene or lubricating oils are being sold upon the date of the Federal Trade Commission's approval of this code.

Rule 3. Except as may be pro-

Personnel of Institute Marketing Code Committees

THE general code committee of the American Petroleum Institute, made up of institute directors:

Roy B. Jones, president and general manager, Panhandle Producing & Refining Co., Wichita Falls, Texas, chairman, and representing the regional district of Texas, south Arkansas and Louisiana.

R. C. Holmes, president The Texas Co., New York, representing the east.

Henry M. Dawes, president, Pure Oil Co., Chicago, the middle west.

P. M. Miskell, vice-president, Empire Oil & Refining Co., Tulsa, the Mid-Continent.

E T. Wilson, chairman of the board, Continental Oil Co., Denver, Rocky Mountain district.

K. R. Kingsbury, president, Standard Oil Co. of California, Pacific Coast.

Regional committee for Texas, south Arkansas and Louisiana, Mr. Jones, chairman.

E. T. Moore, president, Simms Oil Co., Dallas.

E. R. Brown, Magnolia Petroleum Co., Dallas.

W. R. Smith, president, Oriental Oil Co., Dallas.

C. A. Middleton, general manager, Kent-Middleton Refining Co., Corsicana.

T. C. Anderson, president, Liberty Oil Co., New Orleans.

T. J. Gay, president, Gay Oil Co., Little Rock, Ark.

W. S. Farish, president, Humble Oil & Refining Co., Houston.

J. Robey Penn., Texas & Pacific Coal & Oil Co., Fort Worth.

M. G. Grogan, vice-president, Louisiana Oil & Refining Corp., Shreveport.

Regional committee for the east, Mr. Holmes, chairman.

W. C. Teagle, president, Standard Oil Co. of New Jersey, New York.

E. W. Sinclair, president, Sinclair Consolidated Oil Corp., New York.

Axtell J. Byles, president, Tidewater Associated Oil Co., New York.

C. F. Meyer, president, Standard Oil Co. of New York, New York.

George S. Davison, president, Gulf Refining Co., Pittsburgh.

J. Howard Pew, president, Sun Oil Co., Philadelphia.

W. E. Smith, president, Standard Oil Co. of Kentucky, Louisville.

W. M. Irish, president, Atlantic Refining Co., Philadelphia.

Frank Coates, Henry L. Doherty & Co., New York.

R. G. Stewart, vice-president, Pan-American Petroleum & Transport Co., New York.

George P. Whaley, president, Vacuum Oil Co., New York.

C. L. Suhr, president, Pennzoil Co., Oil City.

Richard B. Kahle, president, Beacon Oil Co., Boston.

E. M. Lyons, president, Tiona Refining Co., Philadelphia.

Regional committee for the middle west, Mr. Dawes, chairman:

E. G. Seubert, president, Standard Oil Co. of Indiana, Chicago.

F. Godber, formerly Shell Oil Corp., St. Louis.

H. B. Earhart, president, White Star Refining Co., Detroit.

W. T. Holliday, president, Standard Oil Co. of Ohio, Cleveland.

R. S. King, Refiners Oil Co., Dayton.

E. W. Edwards, president Paragon Refining Co., Toledo.

Frank B. Fretter, president, National Refining Co., Cleveland.

A. J. Callghan, president, American Oil Corp., Jackson, Mich.

Homer H. Johnson, president, Johnson Oil & Refining Co., Chicago.

A. S. Close, president, Hickok Oil Corp., Toledo.

E. H. Hilpp, vice-president, Kentucky Consumers Oil Co., Louisville, Ky.

Regional committee for the Mid-Continent, Mr. Miskell, chairman.

W. G. Skelly, president, Skelly Oil Co., Tulsa.

E. B. Reeser, president, Barnsdall Oil Corp., Tulsa.

Jacob France, president, Mid-Continent Petroleum Corp., Tulsa.

L. L. Marcell, president, White Eagle Oil & Refining Co., Kansas City.

John L. Gray, vice-president, Shaffer Oil & Refining Co., Tulsa.

Waite Phillips, chairman, Independent Oil & Gas Co., Tulsa.

E. W. Marland, formerly of Marland Refining Co., Ponca City.

W. N. Davis, vice-president, Phillips Petroleum Co., Bartlesville, Okla.

F. B. Parriott, president, Transcontinental Oil Co., Tulsa.

L. R. Crawford, vice-president, Producers & Refiners Corp., Independence, Kans.

D. E. Buchanan, vice-president, Chestnut & Smith Corp., Tulsa.

E. J. Bullock, vice-president, Standard Oil Co. of Indiana, Chicago.

Regional committee for Rocky Mountain territory, Mr. Wilson, chairman.

John D. Clark, formerly of Midwest Refining Co., Denver.

F. C. Cramer, head, Denver Powerine Co., Denver.

Regional committee for the Pacific Coast, Mr. Kingsbury, chairman.

G. Legh-Jones, president, Shell Co. of California, San Francisco.

J. A. Talbot, president, Richfield Oil Co., Los Angeles.

Lionel T. Barneson, chairman, General Petroleum Corp., Los Angeles.

Jacques Vinmont, The Texas Co., Los Angeles.

William F. Humphrey, president, Associated Oil Co., San Francisco.

W. L. Stewart, president, Union Oil Co., Los Angeles.

vided in Rule 8, refiners, wholesalers, distributors and/or jobbers shall not construct for retailers, any driveways, canopies, sheds, greasing pits, buildings or other structures, do painting other than their standard signs or loaned equipment, make improvements to existing structures or facilities, nor furnish or loan air compressors, greasing lifts or racks, or other things of value except equipment stated in Rule 1 hereof, nor bear any part of the expense of construction work on the premises of resellers, nor loan money for the same. No company shall paint over any signs or colors of another company until it has communicated with the company whose signs or colors are involved, inquiring whether or not the latter company has any written contract which would be violated by the proposed painting. The latter company shall respond promptly, giving the information requested, and if it holds a contract which would be violated, shall offer to submit it for inspection at its office. If the contract so submitted discloses that the proposed painting would constitute a breach of the contract, the painting shall not be done.

Rule 4. No equipment except trademarked pump globes and other standard advertising devices shall be loaned to tank car buyers and/or distributors.

Rule 5. Refiners, distributors, jobbers, and/or wholesalers shall not pay any rentals or make any allowance for the privilege of installing pumps and tanks, or for displaying advertising on premises where refined products are sold.

Rule 6. Refiners, distributors, jobbers, and/or wholesalers shall not rent from any dealer or consumer any delivery equipment, and shall not purchase from any dealer or consumer any delivery equipment for more than its actual value.

SECOND

Owned and Leased and Licensed Stations

Rule 7. Refining companies, wholesalers, distributors, and/or jobbers may own service and filling stations or sites for same, and may lease such stations and/or sites to dealers for purposes of distributing its products, provided that such leases shall stipulate for a reasonable return to the lessor upon the then fair value of the property for filling station purposes (not less than 6 per cent plus taxes).

Rule 8. Refining companies, wholesalers, distributors, and/or jobbers may acquire by bona fide leases or sub-leases, service and filling stations or sites for same, and such stations and/or sites may be leased or licensed by such company to dealers for the purpose of distributing its products. Such stations and/or sites shall not be acquired at one rental and then sub-leased or licensed at a reduced rental for the purpose of price cutting or rebating. In the event the company makes improvements to such properties prior to sub-leasing same, such sub-lease shall provide in addition for a reasonable return upon the cost of such improvements (not less than 6 per cent plus taxes).

Roy B. Jones, institute director and chairman of its general committee in charge of drafting the code of marketing practices. Mr. Jones is president and general manager of the Panhandle Producing & Refining Co., Wichita Falls, Texas

THIRD

Prices.

Rule 9. All refiners, distributors, jobbers and wholesalers, shall conspicuously post at each point from which they make delivery, the several posted prices of gasoline and kerosene for each class of delivery for such deliveries at the time of delivery.

Retailers and other operators serving consumers through service stations, garages, curb pumps, or pumps located at bulk plants, shall conspicuously post at the place from which delivery is made, prices at which gasoline, kerosene, and motor oils are sold.

No seller shall make any deviation from his posted prices (whether wholesale or retail) by means of rebates, allowances, bonuses, concessions, benefits, unusual credits, scrip books, or any plan, device or other scheme which may directly or indirectly permit the buyer to obtain gasoline or kerosene at a lower net cost to him, or lower his cost of doing business, or lessen his investment in his facilities or equipment.

COMMERCIAL ACCOUNTS. Commercial accounts, whether for delivery at service stations or otherwise, may be recognized as an exception to this rule in sections where it is now in vogue, but shall apply only to written contracts for charge accounts.

Rule 10. The practice of making deliveries of gasoline at refineries or wholesale plants into tank wagons or trucks operated by or for the purchasers thereof, is discouraged. When such deliveries are made, an allowance for cartage should not exceed one cent per gallon.

Rule 11. Coupon books or other scrip of any nature, if used, shall be sold and redeemed at their face value without any discount.

Rule 12. No refiner, distributor, jobber or wholesaler, shall give to a dealer doing business with a competitor, a greater extension of credit, either in time or amount, than that allowed by the competitor for the

—Blank-Stoller Photo

W. R. Boyd, Jr., head of the American Petroleum Institute staff at New York. Formerly bearing the title of assistant general secretary, he was given a new title at the meeting last week at Chicago—that of executive vice-president

purpose of inducing the dealer to cease doing business with the competitor.

Rule 13. On a change in the posted price, no adjustments, allowances, credits or refunds shall be given to any buyer on deliveries already made.

FOURTH

General

Interference with Existing Contracts

Rule 14. No refiner, distributor, jobber or wholesaler shall knowingly induce, attempt to induce, or assist a party to break an existing written contract for the sale of petroleum products between that party and another.

No marketing company shall knowingly sell or deliver gasoline or other petroleum products to any dealer, distributor or commercial account, where such sale or delivery violates an existing written contract between another company and such dealer, distributor or commercial account.

Substitution of Products

Rule 15. All above-ground equipment for refined products shall bear in a conspicuous place the name or trade-mark of the owner or lessor, and no refiner, distributor, jobber, wholesaler or retailer shall knowingly deliver into such equipment any refined product other than the brand designated, or in any way be a party to the substitution of one grade or brand of refined products for another.

Gifts or Bonuses

Rule 16. No oil or other thing of value shall be given away or special inducement granted on opening days, special sale days, or other occasions.

Lotteries

Rule 17. Lotteries, prizes, wheels of fortune, and/or other games of chance shall not be used in connection with the sales of gasoline or motor oils.

Tank Wagon Deliveries to Motor Vehicles

Rule 18. Gasoline shall not be sold from tank wagons or trucks to other motor vehicles except in emergency cases.

Indirect Violations

Rule 19. Refiners will attempt to see that their distributors, jobbers or wholesalers are familiar with and carry out the principles of this code. No refiner, distributor, jobber or wholesaler shall knowingly sell to any distributor, jobber, wholesaler or dealer who knowingly violates any of the provisions of this code.

FIFTH

In adopting this code it is understood that in a case where a competitor who has not agreed to the code shall violate its provisions, the company offended against may report the violation to the chairman, or, in his absence, the vice-chairman of the regional marketing committee of this Institute of the region wherein the violation took place, and may take such steps to meet the competition as may be approved by him, but in any event the company offended against shall promptly make and prosecute a suitable complaint to the Federal Trade Commission.

SIXTH

Definitions

For the purpose of this code, the following definitions are adopted:

1. **Consumer.** One who destroys the exchangeable value of a commodity by using it. He is an eligible buyer from service station, tank wagon, tank car, or in packages.

2. **Refiner.** One who refines crude petroleum and natural gas into refined products.

3. **Jobber,** Distributor, or Wholesaler. One who carries a stock of petroleum products to sell to retail dealers or others for resale, but who may also sell direct to consumers.

4. **Retail Dealer.** One who carries a stock of petroleum products to sell to the consumer only.

5. **Commercial Accounts.** Those persons, firms or corporations engaged in transportation of passengers, merchandise, freight and express with vehicles, and properly licensed by public authorities for those purposes.

Noted for Vigor of His Conservation Work

By Lawrence E. Smith
N. P. N. STAFF WRITER

CHICAGO, Dec. 7

"OF COURSE I am pleased—more than I can say—at being chosen for this high office. The oil industry can give a man no higher honor. There is much work for the American Petroleum Institute to do the coming year and there are many problems. I hope I can make some contribution to their solution. Naturally, I can make no predictions and, until I have discussed the situation with the directors of the Institute, I shall have no idea of the direction our effort will take."

This from E. B. Reeser, president of the Barnsdall Corp., elected Dec. 5 president of the American Petroleum Institute. He succeeds E. W. Clark, vice-president of the Union Oil Co. of California.

In accordance with the revised method of classifying membership in the Institute, divisional vice-presidents were elected. They were: Manufacturing, J. Howard Pew, Sun Oil Co.; Production, K. R. Kingsbury, Standard Oil Co. of California; Distribution, Henry M. Dawes, Pure Oil Co.

Vice-presidents for the past year were Axtell J. Byles, Tidewater Associated Oil Corp.; A. B. MacBeth, Southern California Gas Co. and F. B. Fretter, National Refining Co. Henceforth, membership in the Institute will be in one of the three divisions, instead of being in one general classification.

Amos L. Beaty, New York, was again elected treasurer. A new position, that of executive vice-president, was created under the by-laws provision which permits directors to revise the executive positions. To this place William R. Boyd, Jr., was elected. Mr. Boyd for several years has been assistant secretary and counsel of the Institute. As an executive vice-president, he will have charge of the many affairs of administration. Another change in the executive titles was made. Lacey Walker, heretofore assistant treasurer, is now secretary and assistant treasurer.

In addition to the president and the first three vice-presidents named, the treasurer and the last retired president, members of the executive committee consist of Mr. Byles; Robert W. Stewart, chairman of the Standard Oil Co. of Indiana; W. C. Teagle, president of the Standard of New Jersey; R. C. Holmes, president of The Texas Co.; George S. Davison, president of the Gulf Refining Co. and William N. Davis, vice-president of the Phillips Petroleum Co.

The new president of the Institute is a Tulsa resident, general offices of the Barnsdall Corp. and subsidiary companies being maintained there. He was born at New Ringgold, Pa. and started in the oil business as office boy in the Oil City Fuel Co., now the United Natural Gas Co. In November, 1892, he was transferred to Sistersville, Pa., and for several years continued in the employ of Standard Oil Co. subsidiaries. In 1900 he entered the producing business as an independent operator. Two years later he joined the late T. N. Barnsdall in his mining enterprises, being stationed for a time at Tuscon, Ariz.

In 1907 Mr. Reeser came back into the oil business, still with the Barnsdall interests. When the corporation was formed in 1917, he was made vice-president and assumed charge of the Barnsdall producing interests, living in New York. He became president of the corporation in 1926 at the time the Waite Phillips properties in Oklahoma, Kansas and Texas were purchased.

Early in the conservation movement which began with the appointment of the Federal Oil Conservation Board, Mr. Reeser assumed an outstanding position along this line and it is this writer's thought that his efforts here led to his selection as president of the Institute. He supported and contended for restrictive work in the Seminole district and this past summer spent several weeks of his time conferring with executives of major companies, urging that restrictive measures be adopted in the South American fields. It is significant that a number of members of the nominating committee that presented his name to the directors are executives of companies with large interests in South America.

Directors of the Institute adopted, as a regular part of the Institute activity, the public relations program. The work has been carried on by a committee, created in 1924, under the general direction of the Institute, but by appropriation separate from the regular Institute budget. L. M. Fanning is in charge of this work.

Directors adopted a resolution endorsing the various federal bureaus which conduct technical investigations on petroleum and urged that Congress appropriate money enough to carry on their work. In open meeting, a resolution endorsing the International Petroleum Exposition was adopted.

New Directorate of the Petroleum Institute

(* *Signifies re-elected*)

Pacific Coast (Production)

***L. P. St. Clair**, Independent Oil Producers Agency, Los Angeles.

***D. S. Ewing**, Ethel D. Co., San Francisco.

W. M. Storey, Standard Oil Co. of California, San Francisco.

Central United States (Production)

***W. S. Farish**, Humble Oil & Refining Co., Houston.

Eastern United States (Production)

***Axtell J. Byles**, Tide Water Association Oil Co., New York.

Pacific Coast (Manufacturing)

***H. R. Gallagher**, Shell Co. of California, San Francisco.

Central United States (Manufacturing)

***Roy B. Jones**, Panhandle Production & Refining Co., Wichita Falls.

Eastern United States (Manufacturing)

***Edward Prizer**, Vacuum Oil Co., New York.

***Frank B. Fretter**, National Refining Co., Cleveland.

W. E. Smith, Standard Oil Co. of Kentucky, Louisville.

Pacific Coast (Distribution)

***K. R. Kingsbury**, Standard Oil Co. of California, San Francisco.

Central United States (Distribution)

***R. W. Stewart**, Standard Oil Co. of Indiana, Chicago.

L. L. Marcell, White Eagle Oil & Refining Co., Kansas City.

Eastern United States (Distribution)

***Amos L. Beaty**, New York.

Transportation

***J. Howard Pew**, Sun Oil Co., Philadelphia. (ships)

***C. H. Kountz**, Prairie Pipe Line Co., Independence. (Pipe Lines)

Supply

John S. Carroll, Johns Manville, Inc., New York.

Foreign Trade

*W. C. Teagle, Standard Oil Co., of New Jersey, New York.

At-Large Group

***F. B. Henderson**, Associated Oil Co., San Francisco.

***S. A. Guiberson, Jr.**, Guiberson Oil Investment Co., Los Angeles.

***W. G. Skelly**, Skelly Oil Co., Tulsa.

D. J. Moran, Marland Oil Co., Ponca City.

At-Large Group was also increased by one and **George P. Whaley**, Vacuum Oil Co., was elected to fill this place.

The directors elected the following "directors-at-large"

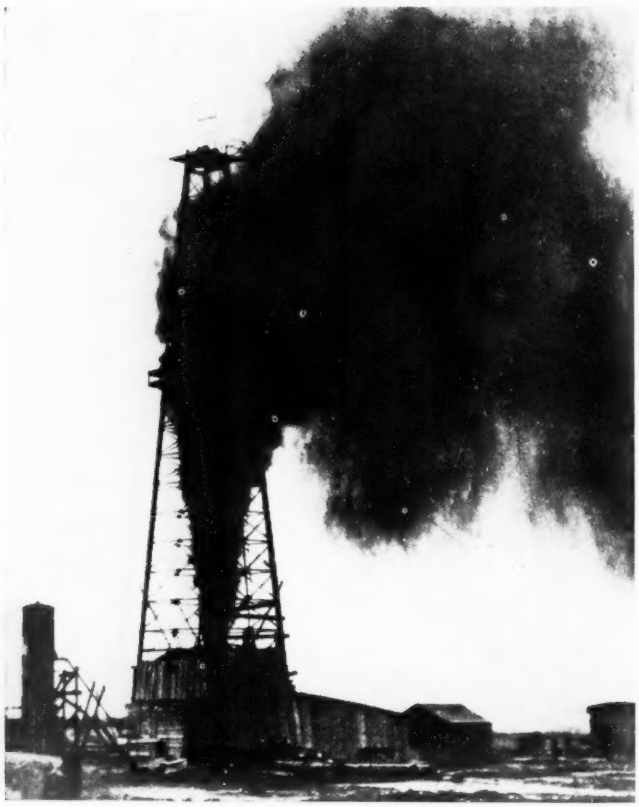
***E. R. Brown**, Magnolia Petroleum Corp., Dallas.

***H. M. Dawes**, Pure Oil Co., Chicago.

Taylor Allderdice, National Tube Co., Pittsburgh.

J. C. Van Eck, Shell Union Oil Co., New York.

E. W. Marland, Ponca City, Okla., was elected to fill vacancy created by death of George H. Jones, Standard Oil Co. of New Jersey.



5000-Bbl. Wildcat Near Oklahoma City Believed to Open New Field

By John Power
N. P. N. STAFF WRITER

At the left is a picture of the Indian Territory Illuminating Oil Co. discovery well near Oklahoma City, which came in Dec. 4

OKLAHOMA CITY, Dec. 10 5000-barrel well, the largest producer ever encountered in the Simpson sand, is performing for the Indian Territory Illuminating Oil Co., over Oklahoma City way. The Foster Petroleum Corp. is interested in the play with the I. T. I. O.

This newest addition to the Oklahoma oil fields has nearly every one in the Capital City running a temperature. It is rank wildcat, located in the center of the SE SE of 24-11N-3W, Oklahoma county. As a matter of fact, it is almost in Oklahoma City, being but six miles from the metropolis.

Production of the new well, which blew in, tossing the tools partially out of the hole, averaged 207 barrels per hour for the first 14 hours. Coming in a few minutes past 3 p.m. Dec. 4, it ran wild for nearly an hour and a half before being brought under control. Production the first 24 hours was 4909 barrels.

The well had been on the verge of coming in for several days. Shortly after starting to drill out the cement plug from the 7-inch A. P. I. casing set at 6355 feet, gas and oil broke through the plug, and blew the tools up the hole to within 2500 feet of the surface, where they lodged.

Although not presenting anything very complicated as a fishing job, it was an undeniably ticklish situation to be fishing for tools stuck in the pipe, with the well on top of the sand, and the pipe cemented so that there would have been no chance to pull it had the necessity arisen.

In spite of the present large production of the well it is probable it will be deepened soon, as both the owners of the well and operators with holdings in the vicinity are anxious to find out what the Wilcox sand, underlying the Simpson, will do.

There is an operators' agreement in force at present which provides that the I. T. I. O. is to have as much drilling time as it wants to complete the well in the Wilcox sand. In the event that the Wilcox produces, a four-day test period is granted, after which the well is to be shut in completely until the first well starts up around it.

* * *

BULLETIN
(By Telegraph)

TULSA, Dec. 10.—Preparations to deepen to the Wilcox sand the big well of the Indian Territory Illuminating Co. in 24-11 North 3 West are under way.

Mud is being put down the hole to kill the flow of oil and drilling is to be resumed as soon as practicable. The operators are pledged to drill to the Wilcox, and, as there is some doubt as to the nature of the present production formation, the well is to be carried down at once.

Although it is generally thought that production is coming from the Simpson there is a possibility that it is the Hunton as the samples carry quite a bit of lime. In the latter event it is thought there is possibly 150 feet more hole to be drilled.

The Empire Pipeline Co. is building a pipeline from the well to the loading rack of the Turley Petroleum Co. at Oklahoma City.

There are 8000 barrels of tankage set up at the well, with 6000 barrels more under construction. As yet no definite announcement of plans for the disposition of the oil has been made, but it is reported that the deepening will take place as soon as this detail has been arranged.

In spite of the evidence of its production to the contrary, the well has not yet been actually and officially drilled in. A showing of oil was encountered at 6357 feet and the well cored from that point to 6404 feet, the present total depth. The actual top of the Simpson is given as 5397 feet. The tools were drilling at 6355 in the bottom of the pipe, when the well first blew itself in through the plug.

From many angles this has been one of the most interesting wells drilled in Oklahoma in recent years. Its unusual depth for an Oklahoma producer, the comparatively little trouble encountered in the drilling, which was done with the rotary to the 7-inch casing point, and, for its depth, the unexpectedly low cost of the completed hole have combined to keep the test in the limelight. Its importance as a deep wildcat has aroused and kept the interest of Oklahoma oil men for some time. As

for the interest which Oklahoma City has taken in the test, well, nearly everyone in the city has been running a fever for months. The town has had the interest in the well of a fond parent.

No one in Oklahoma City actually put the oil there, but from the number of "I told you so's" which have been heard on the streets here everyone in town has known all along that it *was* there.

The productive possibilities of the well are not confined to the Wilcox, nor to the Simpson, for that matter. At 4805 to 4817 feet a gas sand, capable of 48 million cubic feet of gas per day was encountered. Again at 4934 feet, a sand was topped which carried with it even more gas, and, when cored, showed a rich saturation of oil. The latter sand had the unusual and important feature of being more than 100 feet thick, the bottom of it being at 5052 feet. Although this showing was passed up for the time by the operators, there are many who are anxious to see this upper pay given a thorough test. It is thought to be a member of the Layton series.

Just what effect the opening of a field of this depth and productive possibilities may have on the Oklahoma crude situation is not apparent at present. It is not likely that any really great drilling campaign will be under way very soon. Drilling 6000-foot wells is not yet an every day occurrence with Oklahoma operators. In addition to this, the I. T. I. O. through its own leaseholds, and those of its associates in the play, control the situation pretty thoroughly. According to a member of the I. T. I. O. producing department, that company can be forced to drill only 29 wells to protect boundary lines. This is not so bad, considering that the company has 10,000 acres, more or less, under lease, either solely or in partnership.

Ramsey Bros. and T. B. Slick are heavily interested in leases in the vicinity of the well, the former having announced a location in the center of the SW NE of 24-11-3W, half a mile north and a little west of the I. T. I. O. well, about midway between it and the No. 1 Trosper, which the I. T. I. O. is drilling in the center of the NE SW of 13-11-3W. This second well of the I. T. I. O. is now drilling at about 3000 feet, with a showing of oil reported in a sand at 2889 to 2891. Coline Oil Co. owns the 160 acres adjoining the Ramsey tract, but it is not known at this time whether or not this will be drilled immediately. So far, well spacing has been on the 40 acres per well plan.

All things considered, the new producer has been a remarkably cheap well to drill. Total drilling costs, exclusive of pipe and rig have been about $57,000, from the grass roots to the pay. A. P. I. casing has been used throughout, the first casing run after the surface pipe was set being the 9-inch, set at 4798 feet and the 7-inch, run at 6355 feet. Drilling time, from the date of active location to completion, has been five months and 12 days.

The Indian Territory Illuminating Oil Co., through the great amount of acreage it controls around its discovery well near Oklahoma City, has a very good command over the number of wells which will be started in the vicinity of its new well. The discovery, in the center of the SE SE of 24-11N-3W, made 4909 barrels the first 24 hours it was gaged

Gusher Brings Writer Here Before Sunup

(From Oklahoma City Times Dec. 5, 1928)

John Power, staff writer of the NATIONAL PETROLEUM NEWS in Oklahoma, was the first "foreign" oil writer to get into Oklahoma City after the I. T. I. O. gusher blew in. He was here before the sun came up Wednesday morning.

The gusher came in a few hours after dead line on the N. P. N., so this week's edition will miss the story of most interest to Oklahoma City folk. However, next week there will be a different story.

Late Cal. Completions

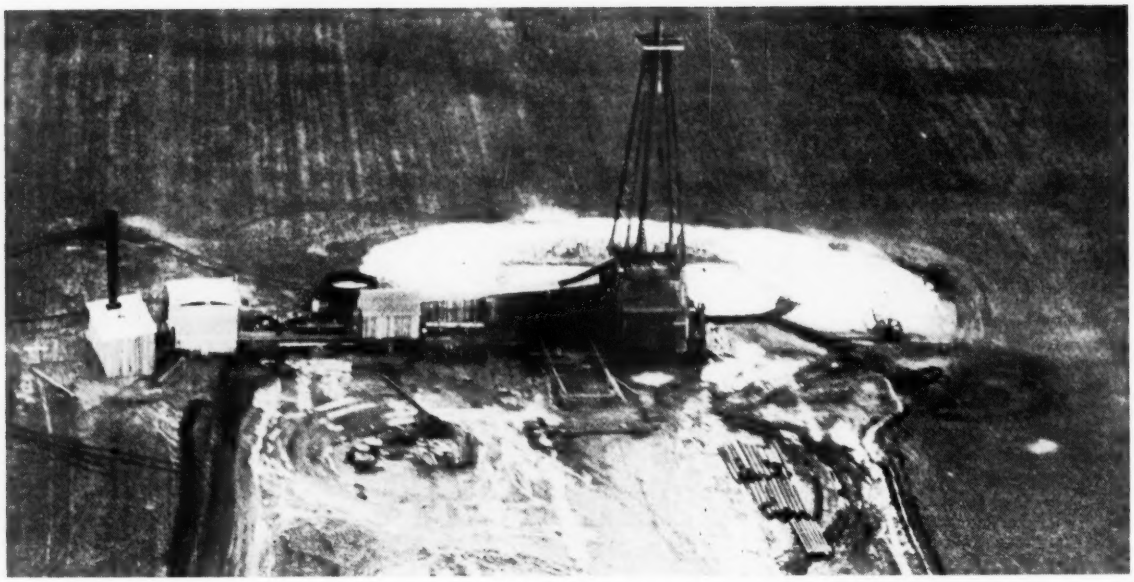
(By Telegraph)

LOS ANGELES, Dec. 10.—Pacific Eastern Production Co. (Gulf interests) completed their Fruitvale No. 6 today for 840 barrels of 22 gravity oil with bottom of the hole at 3884 feet.

The Pacific Eastern now has two wells at Fruitvale flowing about 1800 barrels in addition to four producers shut in just outside Bakersfield city limits.

Associated Oil Co.'s Cypress No. 3 in the Potrero field just outside Los Angeles city limits was completed for 840 barrels of 46 gravity oil in addition to 7,000,000 cubic feet of wet gas.

Associated Oil completed its Green No. 3 for 4500 barrels and Jordan No. 3 for 2500 barrels both in the Buckbee zone at Santa Fe Springs.



The Marland Production Co. has given Kansas the biggest well is has seen completed in years. An unexpected pay in the top of what was thought to be the Mississippi lime, started flowing an estimated production in excess of 6000 barrels daily. As seen from this aerial picture, no tanks were available, and the well spread its production over much of the surrounding territory. Photo by "Scottiefoto," Wichita

Kansas Wildcat Is Record Completion

TULSA, Dec. 8

THE largest well completed in Kansas for many years, the Marland Production Co. No. 1 Goodrich, was as unexpected as it was welcome.

Drilling out of shale into what was expected to be the top of the Mississippi lime at 3010 feet, the well drilled for ten feet of new formation, of which no samples are available, and then came in.

No tanks, no control head, nothing but some hastily constructed earthen storage could be provided to care for the oil, which amounted to an estimated 4000 barrels the first 11 hours. After this period a control head was placed on the 8-inch, through which the well was flowing, and the flood of oil brought under control.

The new producer, in the SW NE SW of 16-25S-1E, Sedgwick county, is producing from an entirely different stratum than the Gypsy-Marland-Bu-Vi-Bar wells to the southwest. Whatever the formation is, chat, siliceous lime, or Mississippian, it is about 41 feet higher than the top of the lime in the first Sedgwick county wells. The latter had no shows of any kind at this depth, nor anywhere in the lime. On the base of the Kansas City lime the Marland well was 51 feet higher than was the Gypsy well.

The well is completely shut in at the present time. The operators have one tall 500-barrel flow tank erected, and two 500-barrel wooden tanks, and are building two 2000-barrel steel tanks. The Derby is laying a line up to the well from its pump station near the Gypsy-Marland-Bu-Vi-Bar wells, (now commonly called the Wright pool, from the farm name on which the discovery well was drilled), in 12-26S-1W. It is also reliably reported that the Marland is preparing to lay a line from the Oxford pool in Sumner county to handle the oil, which is 39 degrees A. P. I. gravity.

Although little can be said as to the future development of the area surrounding the well, the danger of a market-breaking field is practically eliminated, due to the fact that the Marland interests have a solid block of more than 3700 acres surrounding the well, which is almost in the middle of the Marland holdings. Students of the crude markets have had much to be thankful for during the past few days, as the strikes of the week (Marland well in Kansas, and the I. T. I. O. well near Oklahoma City) are both in areas fairly well under the control of single companies.

The discovery has stimulated interest in the oil producing possibilities of Sedgwick county, and several acreage deals for tracts in the northeast-southwest trend across the northern end of Sedgwick county and into Harvey county are reported as either pending or closed. It is likely that this whole area will be given a thorough exploring by the tools in the next few months.

Index to Coming Meetings

Wisconsin Petroleum Association, Schroeder Hotel, Milwaukee, Dec. 12.

Petroleum Accountants Society, Mayo Hotel, Tulsa, Okla., Dec. 13.

Oklahoma Oil Jobbers Association, Oklahoma City, Okla., Jan. 24, 25.

Wisconsin Petroleum Association: Park Hotel, Madison, Jan. 16 and Feb. 13; Schroeder Hotel, Milwaukee, March 13 and Apr. 10; Beaumont Hotel, Green Bay, May 15.

American Oil Men's Association, Congress Hotel, Chicago, Feb. 12, 13, 14.

Ohio Petroleum Marketers Association, Hotel Statler, Cleveland, O., Feb. 13, 14, 15.

Iowa Independent Oil Men's Association, Fort Des Moines Hotel, Des Moines, Ia., Feb. 19, 20.

American Association of Petroleum Geologists, Fort Worth, March 21, 22, 23.

American Oil Burner Association, Hotel Pennsylvania, New York City, Apr. 9, 10, 11.

Millions for Protection From Fire, How Much to Fight Corrosion?

By Paul Truesdell
N. P. N. STAFF WRITER

CHICAGO, Dec. 5

Corrosion.
Fire.

Fire has long been recognized as one of the most dangerous enemies of the refiner but it strikes a blow only occasionally. Millions of dollars are spent every year, however, without question, to prevent so far as possible the outbreak of fires and to provide means for fighting them when they occur.

Corrosion, which only recently has been recognized as one of our major enemies, is at work all the time.

It works in many departments of the plant and it works steadily. It knows neither day nor night shift. Yet very little money is available for fighting its ravages or even to finance research work to find just how the most dangerous corrosive conditions occur and how they may be cured or reduced.

The principal reason for this, undoubtedly, is that fire is sensational, spectacular, terrifying; while corrosion proceeds silently and unseen. It is easy for anyone to see how a fire, not conquered in its infancy, can wipe out an entire refinery or even a town as well, in short order.

It is hard for imagination to picture the destruction being continuously wrought by corrosion because it is out of sight.

Yet experts say that probably 10 times as much property loss is caused in refineries by corrosion during a year as is caused by fires of all kinds and that the loss of life which may be directly traced to corrosion is much greater than that caused by fire.

In fact, probably some fires are really caused by corrosion, whose restless and relentless teeth have steadily and silently gnawed away at the interior walls of a high pressure vessel until it has failed, throwing showers of blazing oil over the plant and bringing death to workmen, not to mention enormous property damage.

These thoughts result from sitting in at a meeting of the general corrosion committee of the American Petroleum Institute and from talking outside with some of the engineers familiar with the corrosion and fire problems as they exist in American refineries.

There are no figures to support the above statements, of course, but they are the rough estimates of men who have been studying corrosion and fire conditions in refineries for years and they are probably not far wrong. This story deals only with the corrosion problem and work that has been done on it as it concerns the refining industry. It is just as big a problem in the producing and pipe line branches.

Much has been done in the past year, by a subcommittee on refinery and marine corrosion of the general institute committee on corrosion. Harry F. Perkins of the Gulf Refining Co. is chairman of this subcommittee. Dr. R. P. Anderson, technologist of the institute, is chairman of the general committee.

IN THE year since the sub-committee was organized a great amount of information has been obtained on the ravages of corrosion in the refinery through questionnaires sent to refining companies. This material has been correlated and indexed and briefed by Mr. Perkins and the committee members but it has been a labor of love, performed in time snatched from exacting and numerous company duties.

The time has now come, it appears, when money should be appropriated by the Institute to employ a competent full-time man to correlate and tabulate and classify and index the information sent in by companies, and to seek further information on the subject. The committee applied to the directors of the Institute for the appointment of such a man.

Mr. Perkins, at the institute meeting, reported on the work of his committee during the past year and laid the plans he intends to follow during the coming year.

It came out in the meeting that, so far as is known to the men most interested, there is not now available any materials or methods that furnish a practical panacea against corrosion.

Members of the committee and refinery operating men in general, it appeared, are incensed at the unjustified claims of corrosion prevention frequently made in advertising various materials of construction, special steels, irons, alloys, protective paints and so forth. Further investigation of materials offered as corrosion proof will be a large part of the sub-committee's work during the coming year.

Stating that, originally, the chief source of corrosion in the refinery was the salts in the crude being hydrolyzed during distillation and forming hydrochloric acid, Mr. Perkins in his report said that this trouble has largely been relegated to the background now in the face of more severe and dangerous corrosive conditions arising from the distillating and cracking of the high sulfur crudes from West Texas.

A letter requesting cooperation was sent out to 214 companies. About 75 expressed a willingness to work with the committee and appointed contact men.

Mr. Perkins stated that, up to Oct. 15, the refinery sub-committee has received 241 records from 24 companies tabulated as follows: Pressure stills 70, other stills 36, condensers 27, gasoline recovery plant 16, tanks 32, acid plant and treaters 28, miscellaneous 32.

"These records have been converted to standardized summaries for ready comparison and study," said Mr. Perkins.

"In analyzing the reports turned in and other information, the following points are brought out:

"The greatest interest is in pressure still corrosion. This may be due to the high unit value of the apparatus and the operating risk from failure.

"Nine companies report having tried, or are trying, methods of neutralization.

"SEVEN companies report having tried, or are trying, linings of steel and cement.

"Twenty companies report having tried, or are trying, calorized tubes.

"A few companies tried the first offering of chrome-iron tubes which were found unsatisfactory, while a dozen companies are arranging to try the new chrome-nickel-iron alloy and low-chrome-iron tubes.

"Reports on piping and valves are less conclusive and require more study due to the large variety of materials and makes in use, and their widespread application.

"There is found great variation in processes, pressures, charging stock,

coke formation, methods of cleaning, etc., and these must be correlated.

"We can say tentatively that the tube situation is promising for those who desire longer life, but certain features and characteristics which will be developed later must be taken into consideration.

"Linings for pressure stills, as reported consist of steel, concrete and metal coatings. While work is progressing along this line, generally satisfactory results have not yet been obtained because of mechanical difficulties.

"Neutralizers, such as lime and caustic soda, have been quite extensively tried in connection with corrosive charging stock. These have proved effective and in general are reported to have reduced corrosion 50 per cent, but their ultimate economy is in question and seems to be a matter of local importance. * * *

"The most fascinating and elusive subject is that of paints and coatings, and between improper application, misleading information and general difficulties in testing there seems to be great need for organized and standardized work along this line. The committee is now in possession of a long list of paints being tried, showing the results obtained, and when these can be given special attention a concentration of effort on the most promising ones should bring some concrete results. If a paint could be developed and would stay on and protect the under side of tank roofs and the cargo tanks of tank vessels for three years, I believe it would pay and go far toward reducing the corrosion problem.

"In mentioning marine corrosion I can only show the principal points of attack as reported in records:

"Loss of hull rivets is serious.

"Hull plates when kept properly painted give satisfactory life.

"Bulkheads of cargo tanks in which light oils are carried corrode too rapidly.

"Cargo lines, heating coils, propellers, steam condensers and water jackets of oil engines are other subjects of corrosion.

"There is much electrolytic corrosion in connection with marine equipment and most of the balance is by moisture deposited from the air. Electrolytic corrosion is intended in this case to cover corrosion between parts of equipment such as rivets, plates around rivets, pipes and fittings, etc., that are submerged in a good salt water electrolyte most of the time, and really refers only to the cases where the electric path or circuit is quite long as compared to the circuit in the case of so-called homogeneous metals.

"Steel made today seems much less resistant to corrosion than that manufactured 15 or more years ago. The committee is in great need of accurate proof of this statement.

"Paint seems to be the logical general preventative when a satisfactory one can be developed.

"The U. S. Navy Department, Lloyds Register of Shipping and the American Society for Testing Materials are also working on the marine problem."

The refinery and marine corrosion sub-committee consisted last year of H. F. Perkins, chairman; Robert E. Wilson, Standard Oil Co. of Indiana; Ralph J. Reed, Union Oil Co. of California; A. E. Harnsberger, Pure Oil Co.; Walter Samans, Atlantic Refining Co.; Brian Mead, Humble Oil & Refining Co. and E. S. Dixon, The Texas Co. and Mr. Turnbull, the Sun Oil Co.

Some of these men were unable to devote much time to the work on account of the pressure of other duties and they have appointed others to represent them during the coming year. For instance, Mr. Wilson is succeeded by Walter G. Whitman of the same company, Mr. Mead by S. S. Shaffer and Mr. Turnbull by Lyman Quincy of the Sun Oil Co.

Mr. Perkins announced that for the coming year he has laid out the work of the committee in seven divisions and has definitely assigned committee members to each division, all of them having accepted the assignments. The divisions and members assigned to them are:

Paints: for tanks and tank ships—Reed and Samans.

Pressure stills: tubes and plugs, linings, neutralizers—Whitman and Harnsberger.

Iron alloys: fire preparatory alloys, copper bearing steel—Dixon.

Condensers: stainless steel, nickel, admiralty, ambrac, steel, cast iron etc.—Shaffer and Samans.

Metal tests: collect and tabulate data—Dixon.

Valves: service, material and trim —Reed and Dixon.

Sprayed metal and metal coatings —Samans and Dixon.

Crude and pipe stills: neutralizers, vapor lines, towers, rundown lines—Whitman, Shaffer and Dixon.

Soil Stress Factor Recognized In Line Coating Failure

CHICAGO, Dec. 8

AMONG reasons for the failure of protective coatings on pipe lines given by Dr. Gordon N. Scott, American Petroleum Institute research associate at the Bureau of Standards, is "soil stress," which factor has not hitherto been emphasized, nor by many understood.

Dr. Scott's report to the A.P.I. in Chicago was on the first project that was assigned to him, a field study of pipe line corrosion as affected by the use and behavior of protective coatings.

Soil stress effect he defined as the ability of the soil, while adhering to the coating material, to expand or contract with changes in moisture and temperature conditions, perhaps destroying the value of the coating.

Coatings frequently are destroyed in handling the pipe, said the report. The injured places can be patched, but too often the patch work is inferior to the original job. Stringing of the pipe along the right of way, after it has been coated at the mills or in a central yard, and the use of wrong pipe tools cause damage, also.

Referring to methods of handling, Dr. Scott said that the use of chains, wire or manila rope should be discouraged. Manila rope, used on a spindle in raising or lowering the pipe, travels around the pipe and strips off the coating. Where grapples or pipe tongs are used a small piece of sheet iron, bent to fit around the pipe, assists in reducing the damage from the sharp edges of jaws. The life of such a guard is short. In raising or lowering pipe a broad canvas or leather sling does least damage to the coating of any type of tool which is used.

Oil has a bad effect on bituminous coatings, Dr. Scott reported. No pipe so coated should ever be put into an oil soaked trench. Pipe which is smeared with oil, usually coming from leaky collars, should be thoroughly cleaned with petroleum distillate, light grade.

It is becoming general practice to spot weld large pits and to patch pitted areas. Such patches increase the difficulty of getting a good wrapped coating. In wrapping fabric tightly over the irregular surface of a patched area, strains are developed in the fabric and air bubbles may be entrapped under the fabric. Strains are relieved by cutting the fabric along the contour of the welds. Proper patching can then be done.

Dr. Scott, who has made studies of pipe under varying conditions and different ages of coatings all over the country, presented general conclusions as follows:

1—The failure of a great many coatings has been attributed to the lack of proper precautions in the application of the coatings. Undoubtedly meticulous care in the application of coatings is of value under

conditions where a given coating may satisfactorily prolong the life of a pipe. But if a coating will fail under the chemical or mechanical action of the soil, obviously no amount of care in application will materially affect the time of failure.

2—Three outstanding questions arise from a consideration of protective coatings and their use.

(a) How corrosive is a soil? It would be of great value if we could go over a virgin right-of-way and specify the soil's corrosiveness in terms of the lasting qualities of bare pipe. This question is receiving a great deal of consideration in the industry and elsewhere and it is not unreasonable to expect that within a few years a workable answer will be available.

(b) What are the conditions which determine what added pipe-life may be expected from a selected protective coating and how may these conditions be rapidly ascertained? A partial answer to this question is, the writer believes, on your pipe lines.

There is an immediate need for information as to the type of soil in which a given coating may be expected to perform satisfactorily in service. The meager data collected to date indicate that the "soil stress effect" is most pronounced in soils which are highly colloidal and which are periodically subjected to changes in moisture content. Simple panel tests such as have been described may prove to be a very valuable quick method of estimating the relative order in which failure may be expected in two or more soils.

A clear understanding of the factors involved in the failure of coating materials should be of aid in the proper selection of a protective coating for a predetermined condition of service. Too many coatings which are entirely unsuitable for service under the conditions to which they are exposed, have been applied to pipe lines in the past. It appears as though we might well extend our attention for a while from care in application to conditions to which coatings are subjected.

(c) How may we know, if the answers to the above questions are known, the economy involved in the application of a selected protective coating in a specified soil? The faithful recording of all data which will lead to the evaluation of every element of cost entering into the series of operations involved in any line treatment will pave the way to true economy in pipe line maintenance.

It is obvious that if we know a soil's quality (defined by the extent to which bare pipe will perform satisfactorily in service) and if we know what added pipe-life various coatings will yield in that soil, then the selection of the coating which can most profitably be employed for the protection of a pipe line becomes a simple arithmetical problem providing cost data are available.

Jobber Contracts in Ohio Based On Service Station Prices

CLEVELAND, Dec. 10

CONTRACTS for gasoline are being actively solicited by several large refining companies in Ohio again this year. However, instead of basing the prices on the posted tank wagon market of the Standard Oil Co. of Ohio as in the past, most of the 1929 contracts are being based on the posted service station price of the Standard of Ohio.

The margins under the service station price run from 4½ cents to 5 cents minimum. A few have been made with a 6-cent minimum. Some of the contracts have a 7-cent maximum limit but many of the offerings have no maximum limit.

The usual type of contract is a guarantee that the jobber shall receive at least 5 cents under the posted *service station* price of gasoline but in case the posted *tank car* price of gasoline of the Standard of Ohio is the lower price the jobber may accept the *tank car* price.

One company has placed 7 cents as the maximum limit to the margin it will give the jobber. This contract is equivalent to the old 4½-cent marginal contract that was based on the posted tank wagon market.

One company also uses the price of crude to govern part of the prices in its contract. For example, it specifies at the time of writing the contract that the netback to Group 3 shall be not less than 6½ cents a gallon with the price of a certain grade of crude oil as it is. When the price of the specified grade of crude rises 5 cents a barrel the Group 3 base price under the contract advances ¼-cent a gallon. This contract works out this way:

For example, 36 gravity Oklahoma crude oil may be taken as the control grade of crude. The price of this grade is $1.36 a barrel at the well. The minimum netback this company will receive is 6½ cents Group 3. The price of crude is advanced 15 cents a barrel. Then the minimum advanced ¼-cent a gallon for each 5-cent raise or ¾-cent a gallon. The minimum netback the company will then receive is 7¼ cents a gallon.

However, this company is receiving considerably more than its 6½-cent minimum. Under the 5-cent minimum margin, the delivered price of gasoline to Ohio jobbers would be 12 cents without the 3-cent tax. However, the posted price of the Standard Oil Co. for gasoline delivered in Ohio is 11¾ cents, so the jobber gets his gasoline for 11¾ cents or at a price ¼-cent a gallon less than he would have to pay were he receiving only his minimum margin.

If the service station price were held unchanged and the price of crude were to advance, the jobber with a freight rate from Oklahoma to north central Ohio, for example, of 3.60 cents a gallon would have at least a 5-cent margin under the service station price until the basic Group 3 price rose above 8.40 cents a gallon. Above that price he would be receiving less than 5 cents margin under the price of crude regulatory clause. Crude would have to be advanced approximately 40 cents a barrel to bring about this condition. The jobber's plight would not be relieved then unless the price of crude fell or the service station price of gasoline rose.

The 1929 contracts are being based on the retail price largely because of the chaotic tank wagon market in Ohio the last two years. The posted price has been merely a fiction most of the time. Since Nov. 15 when the Standard of Ohio put into effect its new gasoline price structure probably more gasoline has been sold at the posted prices than in the same number of weeks at any time the last two years.

But conditions are still in a critical stage, some of the large distributors report. There are frequent reports that consumers who must pay the posted price of gasoline for tank wagon deliveries, 19 cents, are putting out a pump and selling to any one who might want to buy and thereby are being allowed a dealer's concession of tank wagon deliveries at 17 cents a gallon.

Consumers are bartering keenly to get the larger discounts and the larger distributors are afraid that too much credence might be placed in some of the rumors being circulated by some consumers to get 2, 3 and 4 cents off the posted service station price of gasoline.

It is feared that some of these reports which are ripe now when contracts for 1929 are being sought, might lead to an outbreak of price cutting which had made the Ohio market a bad one for many months to Nov. 15.

The small jobbers are working close to the posted market, it is reported, because they are having less margin to play with and the trouble is said to lie mostly with the integrated companies who have their own refineries and production.

One large distributor today said the Ohio market was again a tinder box which might be instantly ignited by a contract to any of many known price cutters.

Review of Late Production News

AGAIN of 14,700 barrels in daily average production of crude oil was reported for the country during the week ended Dec. 8 by the American Petroleum Institute. Output was 2,520,850 barrels daily average.

Imports of crude oil rose 56,143 barrels, being at the rate of 285,000 barrels daily. Total new crude supply was 2,805,850 barrels for the past week.

The St. Louis pool in Oklahoma decreased 4000 barrels on daily average and Little River decreased 5050 barrels.

Winkler county production in west Texas increased 5700 barrels and Howard county 3600 barrels.

Salt Creek, Wyo., field decreased 5650 barrels.

Santa Fe Springs in California gained 6000 barrels on daily average while Long Beach fell off 2000 barrels.

California

OPERATORS holding acreage in the Kettleman Hills area in Kings county, Calif., a recently proven field, have tentatively decided to drill only one well to 20 acres and locate offset wells 330 feet from the property line, thus not permitting any well to be closer than 660 feet to that of another operator. Later, it is expected operators will reach an agreement limiting production if that is necessary. The land in this area is held in comparatively large blocks.

Operators at Santa Fe Springs and Long Beach have been asked to officially agree to the proposed conservation plans for these fields not later than Dec. 18. Printed agreement was mailed to all operators Dec. 7. The plans call for repressuring upper zones at Santa Fe Springs, pinching deep wells there if necessity arises and pinching of big gas producers at Long Beach to reduce surplus output of gas.

There is some new activity at Seal Beach in the old part of the field, with 12 strings of tools busy, drilling to previously proven deeper zones. This area is held entirely by three larger companies.

Oklahoma-Kansas

BOTH Oklahoma and Kansas featured the completion of big wildcat wells during the week. The Indian Territory Illuminating Oil Co. well in the center of the SE SE of 24-11N-3W, which had an initial production of 4909 barrels the first 24 hours, is a Simpson producer, the pay having been topped at 6397 feet and the well cored to 6402 feet.

Forty-acre locations will be the rule of development, it was decided at an operators' meeting. Ramsey Oil Corp. has made a location a half mile north of the discovery, and the Coline Oil Co. has announced a location offsetting the Ramsey spot to the west.

The Marland Production Co. wildcat six miles northeast of the Wright pool is Sedgwick county, Kans., is producing from an unidentified formation. The pay at 3010 feet was unexpected, and the well flowed open into earthen storage for nearly eleven hours, producing an estimated 4000 barrels in that time. The discovery is in the middle of a 3700-acre block owned entirely by the Marland. The well is in the SW NE SW of 16-25S-1E.

Trouble in the air-lift plant on the Youts lease of the Independent Oil & Gas Co. in 19-7-5 occasioned the big drop in Wilcox production in the St. Louis pool. A 200-barrel per hour Simpson well on the Prairie Oil & Gas Co. Gammon lease in 30-7-5 added to the production of the field as a whole. The well is an inside location, completely surrounded by production, although none of the offsets were as good wells as the new one.

The Misener sand pool in 8-5 had two new wells during the week, one in between the discovery well and the Amerada Petroleum Corp. well in 1-8-4; and one a south offset to the discovery well. The former apparently proves up a territory nearly two miles long, running in a northwest-southeast trend between the discovery and the Amerada well.

Wyoming, Montana

IT MAY be that the Allen Oil Co. refinery at Lovell, northern Wyoming, near Elk Basin, Oregon Basin, Frannie and other producing fields will resume operations. Mere Oil Co. refinery at Thermopolis is being moved to Osage, eastern Wyoming.

Roy Henderson and Frank J. Bon, of Cheyenne, in an amended petition in a suit filed against the Midwest Refining Co. in March, 1927, asks for $10,000,000. They claim they should have been given the state oil and gas permit in Grass Creek which was given to the Midwest.

Prairie Oil & Gas Co. is surveying various structures in the Wind River Valley in Fremont county, Wyo., with a magnotometer.

All bids of refineries and purchasing companies to contract for Montana royalty crude were rejected last week by the land commissioners because of varying stipulations accompanying the bids. New advertisement is being made, and bids will be considered Dec. 12.

The Pondera field in Wyoming had four more wells completed last week bringing the total of producing wells to more than 60. The field may have another pipeline outlet, the Pondera Pipe Line Co. having recently been formed for that purpose.

Texas, New Mexico, Louisiana

THE theory of depletion of petroleum reserves received another body blow when the Texon Oil & Land Co. completed its B-1 University deep well, in the heart of the Big Lake field, Reagan county, Texas, for 275 barrels daily at 8520 feet. This well, which set a world record for depth of hole, produced oil testing about 44 A. P. I. gravity and yielding around 56 per cent gasoline under refinery test.

Texon's well established structural conformity of the deep pay with the 3000-foot producing level of the Big Lake field. If similar structural conformity exists as between deep horizons and present productive levels of flush fields elsewhere in the Permian salt basin than the time will come when all will call for redrilling to great depths.

Under present economic conditions the Texon discovery is important for its future significance rather than indicating development to ensue at once. It is equivalent, as the first well at depth in West Texas or southeastern New Mexico, to the discovery of an entirely new geological province or region.

The Boggy Creek salt dome of Anderson-Cherokee counties, east Texas, is to have an outlet for the controlled crude of Humble Oil & Refining Co., and Rio Bravo Oil Co., who own all of the structure. Humble has started building an 8-inch pipeline from the field to Groesbeck, where connection will be made with its Mexia-Powell system.

Who Is Right on Sulfur in Gasoline, United States or Europe?

By Paul Truesdell
N. P. N. STAFF WRITER

CHICAGO, Dec. 7

SULFUR, waving his bright yellow plumes, sat in the front row at a meeting of the refinery technology group of the Institute on the evening of Dec. 5 and urged the technologists on to considerable debate.

The debate was on the well-worn subject of allowable sulfur limit in gasoline. It followed an address by Dr. A. E. Dunstan of England on the methods of desulfurizing petroleum products which are employed in the refineries of the Anglo-Persian Oil Co. of which he is chief chemist.

The discussion also wove itself around two other papers read at the meeting by H. H. Hewetson* and Sidney Born,* respectively, on refining of West Texas crudes and their derivatives. It ended as all other discussions of the subject—to wit, at the starting point.

Statements made in his speech by Dr. Dunstan precipitated the debate. He stated that the Persian crude on which his company operates is a high sulfur oil, containing some 1 to 1.1 per cent of sulfur, comparable in sulfur content with West Texas oils. He stated that there is no sulfur requirement in the British gasoline specifications and that he sees no reason to worry about corrosion from sulfur in motor fuel unless there is too much elemental sulfur. The statement of Dr. Dunstan that brought the debaters into action was as follows:

"****One must regard the desulfurization of gasoline from the point of view of practical politics.****People like to have a spirit which does not smell too bad. That is about all they are concerned about. The actual numerical content of sulfur is another matter that does not trouble them.

"Provided your gasoline hasn't got any elemental sulfur, which is bad from every point of view, hasn't any hydrogen sulfide or evil-smelling mercaptans, I do not see that the actual sulfur content is a thing to worry about. I say that particularly when you realize that in the diesel and in the semi-diesel engines it is quite customary to burn fuel containing upwards of 3 per cent of sulfur."

Dr. A. E. Dunstan, chief chemist, Anglo-Persian Oil Co., a guest and speaker at the American Petroleum Institute meeting

This brought Dr. J. B. Hill, chief chemist of the Atlantic Refining Co. to his feet.

"I wish we could all agree with Dr. Dunstan in his opinion.*****I would like to know something more about his reason for thinking that.

"In this country we think there has been some fairly conclusive work done, the work of Mougey of General Motors and of Diggs (Standard of Indiana) which does show that an excess of sulfur over a certain limit will give corrosion of the parts within the crankcase. I think we all admit it can be eliminated if we can eliminate water. I wonder if he thought that was the bogey?"

To this Dr. Dunstan replied:

"In our experience running cars for say about 5000 miles, with gasoline containing various sulfur contents, we haven't met that difficulty. During the war a friend of mine ran a car on the first runnings of benzol—it was practically plain carbon bisulfide—without any difficulty. You have a dry atmosphere, if you will allow me that remark."

Dr. Gustav Egloff, Universal Oil Products Co., discussing the observations he made on a recent European trip, said:

"So far as I could ascertain, there is no such thing as a sulfur specification in Europe. They do not know the problem of corrosion that we assume has taken place in the United States with a sulfur specification greater than 0.1 per cent.

"England is marketing benzol blends as high as 0.6 per cent sulfur. No technologist over there with whom I talked knew anything about the problem of corrosion in that country.

"Last year approximately 20,000,000 gallons of benzol blend fuels containing from 0.4 to 0.6 per cent sulfur were marketed in England while in some blends now on the market there the sulfur runs as high as 0.7 per cent. Five per cent of all the gasoline sold in England at the present time is a benzol blend offered at a premium of 5 cents a gallon, though containing 0.2 to 0.5 per cent sulfur.

"Before the war, the percentage of sulfur in English gasoline ran as high as 1.3 per cent."

Dr. Egloff stated that Rackewitz of the Luft Hansa, the great German commercial flying company, stated that the company has a specification for its airship fuel of 0.3 per cent of sulfur. It has used motor fuel containing as high as 0.5 per cent and has found no corrosion.

In France and Czecho-Slovakia, Dr. Egloff said he was told that there is no such thing as a sulfur limit in their motor fuel specifications.

Mr. Hewetson, before reading his paper, joined briefly in the discussion,

*National Petroleum News, Dec. 5, 1928, page 97.

throwing his weight to the side of those who are inclined to minimize danger of corrosion from widening the sulfur limit.

He reported that he had put into a Chrysler car West Texas cracked distillate containing 0.35 per cent sulfur without any treatment whatever and made test runs of from 500 to 800 miles and he summed up results as follows:

"Take the lubricating oil out of the crankcase (after such a run) centrifuge it to remove the water, test the water for acidity and you have none."

Dr. Dunstan gave a description of treatment of gasoline and kerosene as carried out in his company's refineries. This will be published in the Dec. 10 issue of NATIONAL PETROLEUM NEWS.

The Persian crude in the company's main field, Dr. Dunstan said, is a paraffin base oil with about 1½ per cent hard asphalt and a sulfur concentration a little over 1 per cent. The oil is sweet smelling. No acid is used in Anglo-Persian refineries, all treating being done with calcium hypochlorite and soda.

Chicago Retail Gasoline Cut Hits 'Bootlegger'

(By Telegraph)

CHICAGO, Dec. 10.—"Bootleggers" who sneak around Chicago nocturnally with unidentified tank trucks dumping doubtful gasoline into vending equipment loaned to dealers by legitimate distributors received a severe blow Dec. 10.

Standard Oil Co. of Indiana reduced the retail price of gasoline in Chicago and suburbs 1 cent without changing the tank wagon price. Suburbs included are northward to Waukegan, westward to Wheaton and southward to Gary.

Dealers' differentials remain unchanged because the quantity discount agreement is figured from retail price. The penny lost from jobbers' margins makes it more difficult for night riders to undersell the published price schedules. Standard officials said the change was made to meet competitive conditions.

Dealers who secretly buy cheap gasoline to adulterate their branded merchandise also received a scare last week when two partners operating a private filling station in Chicago both were fined $200 and costs under deceptive advertising law in Chicago court.

Frank Peska, city prosecutor, got conviction and fines on Leo Burman and H. Caslowsky, dealers in Sinclair Refining Co.'s products in Ogden Ave. First fines imposed were limit of the law. Other cases are to follow.

Ernest J. Nicklos, who recently resigned as division superintendent of The Texas Co.

Atlantic Rfg. New Price Structure Corrected

CLEVELAND, Dec. 11.—Discussion of the Atlantic Refining Co.'s new gasoline price structure in Pennsylvania and Delaware, as carried in our Dec. 5 issue, quoting R. D. Leonard, vice-president of the company, was in error.

The actual price structure, which became effective Dec. 3 is as follows, applying only to Pennsylvania and Delaware, and not including prices in the company's New England territory:

Retail service station price 17 cents, without tax.

Tank wagon price 16 cents, without tax.

Price to dealers for resale 14 cents, without tax.

Commercial accounts—contracted for, for a definite quantity and for a period not less than a year—take the following discounts:

For deliveries on such accounts through service stations, 1 cent off the posted service station price where the contract calls for from 5000 to 10,000 gallons a year 2 cents off the posted service station price where the contract calls for 10,000 gallons and more.

For deliveries on such accounts by tank wagon, 1 cent off the posted tank wagon market where the account calls for delivery of 5000 to 10,000 gallons during the year and 2 cents off the posted tank wagon market where the contract calls for 10,000 gallons and over.

No concessions of any character are granted to any class of trade except to commercial accounts under contract as stated above.

Nicklos Resigns From Texas Co.

TULSA, Dec. 8

ERNEST J. NICKLOS, division superintendent of The Texas Co., with Tulsa headquarters, tendered his resignation during the American Petroleum Institute meeting in Chicago. While Mr. Nicklos had made no statement as to his plans, as this is written, it is probable that he will shortly assume an executive position with the Marland Oil Co.

Date for the effectiveness of his resignation is as yet indefinite, but he will remain here until The Texas Co. appoints his successor.

Mr. Nicklos is one of the outstanding oil men of the Mid-Continent. He came to Tulsa five years ago to succeed the late Colonel Wilson as division superintendent. Throughout this period he has been prominent in oil company cooperative effort and has been selected by fellow producers for important committee work.

His oil experience has been unusual. He was born in Petrolia, Ontario, and had his early training in the fields of that region. From there he went to the fields of Galicia, in association with the producing firm of Bergheim & MacGarvey. He spent eight years in Galicia. From there he went to Mexico as general manager of the Anglo-Mexican Oil Fields, Ltd., later assuming the same position in the Tampico Oil, Ltd., an affiliated company.

He left those companies to become a drilling contractor and Independent producer. His career along these lines was good and bad, but the good predominated.

His Mexico experience took 14 years out of his life. He next came to Houston with the intention of settling down there to be an Independent producer. He had started a well when D. J. Moran, of The Texas Co., now president of the Marland Oil Co., persuaded him to enter the company and move to Tulsa.

All this knocking about over the world has made something of a linguist of Mr. Nicklos. He is at home in four languages—English, German, Polish and Spanish.

Mr. Nicklos has been active in the standardization work of the American Petroleum Institute, as national chairman of the committee on rotary drilling equipment. He has faithfully attended the meetings and his long experience with rotary equipment has enabled him to make important contributions to the movement. He is a director of the International Petroleum Exposition and is a member of the Seminole operators' advisory committee on conservation—usually known as the shut-down committee.

Need for Continued Curtailment Emphasized by New Finds

By Paul Wagner
N. P. N. STAFF WRITER

CHICAGO, Dec. 7

FRESH field discoveries in Kansas, Oklahoma, Texas and California brought before the A.P.I. division of Development and Production Engineering, at its economics session Dec. 5, the necessity for continuance of rationalization measures such as prorating and curtailment in development operations.

Fast on the heels of the Kettleman Hills discovery in California, which was described as possibly opening the greatest oil reserve on the Pacific Coast, came reports to the Institute of current completions of major importance by the Indian Territory Illuminating Oil Co., near Oklahoma City; another by Marland Production Co., in southern Kansas; and data from West Texas on the world's first 8500-foot producing well.

The West Texas completion, University B-1, drilled by Texon Oil & Land Co., in the heart of the Big Lake field, Reagan county, started off making 275 barrels daily of 44 A.P.I. gravity oil, corrected to 60 degrees Fahr.

The size of the well was less important than the significance of its completion at that depth, which means that other pays eventually may be found underlying every currently important producing area in West Texas.

Details of the 4000-barrel Kettleman Hills well have been previously published[1]; also a report on the similarly significant findings in southern Kansas[2]. The well of the I.T.I.O., which proves a production trend from the Greater Seminole area beyond Oklahoma City, to the northwest, is dealt with in detail elsewhere in this issue.

The discussions of production economics came from the floor after presentation of papers dealing with west Texas prorating, by J. Elmer Thomas, petroleum geologist and engineer of Fort Worth; production control in Oklahoma, by Ray M. Collins, Seminole umpire; gas conservation and production in California, by M. E. Lombardi, production head of the Standard Oil Co., San Francisco; and producing conditions in the Rocky Mountain region, by Sid H. Keoughan, president of Continental Oil Co., Denver. These papers have been published, in whole or in part, in the Dec. 5 and Dec. 12 issues of NATIONAL PETROLEUM NEWS.

President W. S. Farish of Humble Oil & Refining Co., who presided, discussed progress toward solution of the industry's problems by saying:

"When we can see our troubles and frankly discuss them I believe progress is in sight and that solution will come in time."

He had thoroughly sold himself, Mr. Farish said, on the necessity for proration and the necessity for group agreements relative to production. He said he believed the industry generally is becoming sold on the point, so that in time "we are going to have in our whole producing effort a common view."

After referring to the new field discoveries Mr. Farish said:

"To any thinking man it seems to me that this (producing) problem is more intense and of more importance today than ever before. In Texas, in spite of the fact we have had real conservation, tightly drawn contracts, absolutely fixed limits placed on production from flush areas, we have more oil in sight than ever before. We have more undrilled known structures than ever before in history and potentially Texas unquestionably has more oil to offer than ever was known before in any single state."

Mr. Farish described Oklahoma production and Oklahoma conservation efforts as "today somewhat abated." The operators in that state, he said he had found on a recent visit to Tulsa, feel that Oklahoma cannot overproduce next year, looking at 700,000 barrels daily as a measuring stick as between overproduction and a balance of production.

He had refused to agree with that understanding of the Oklahoma situation, Mr. Farish said, and now "firmly believes that unrestricted production means oversupply and means it in 1929."

Ben C. Belt, West Texas division chief geologist of Gulf Production Co., Fort Worth, took the floor "specifically," as he stated it, to urge the necessity for continuing prorating measures. Mr. Belt said:

"There is only one circumstance that could seriously menace growth of proration. That circumstance is the possibility that rumor may foster a myth that the occasion for proration has nearly passed. Nothing could be farther from the truth."

Mr. Belt measured future yields of West Texas by saying that the Big Lake, Church & Fields, McElroy, McCamey and older Howard-Mitchell districts will maintain present non-flush production indefinitely.

"I am not going to argue with doubters," he said, "that the Hendricks field is not nearly done. I only want to leave with you the fact that Hendricks has produced 57,000,000 barrels flush oil to date and that there is at least as much virgin but proved land of the Hendricks class in Winkler county today as comprised in Hendricks production."

He wanted it remembered, Mr. Belt said, that the Yates field is two and a half times larger than Hendricks, that completions show 20 per cent greater initial productions; also that because of the system of prorating applied there the field had produced only 22,000,000 barrels, shows no water except in edge wells and well-head pressures have not declined one pound.

G. Clark Gester, chief geologist of the Standard Oil Co. of California, read a discussion of the West Texas situation prepared by Warner Clark of Dallas, southern manager of the Cali-

Officers Reelected

NATIONAL officers of the A. P. I. division of Development and Production Engineering, reelected at the Chicago meeting, Dec. 6, are:

John R. Suman, general production executive, Humble Oil & Refining Co., Houston, general chairman.

T. E. Swigart, Shell Co. of California, Los Angeles, general vice chairman.

Carl A. Young, standardization director, American Petroleum Institute, Dallas, executive secretary.

The general chairman's report to the national meeting urged work next year on production control and the popularizing of equipment standards.

Early in 1929, it was announced, the division will issue a volume under preparation in collaboration with the United States Bureau of Mines on "The Function of Natural Gas in the Production of Oil." This volume will embody findings of the Marland committee on gas conservation.

1—NATIONAL PETROLEUM NEWS, page 43, Dec. 5, 1928.

2—NATIONAL PETROLEUM NEWS, page 26, Dec. 5, 1928.

fornia Co., subsidiary of the Standard.

Mr. Clark said that "as to establishing the fact that there is an enormous overproduction of crude oil in the United States it seems to me that this is a matter past discussion. Surely everyone will grant that there is an overproduction of oil. However, we do hear considerable criticism regarding the potentials for prorating purposes as established in Yates field, and elsewhere; because, it is said, the wells will not continue to flow according to the established potentials.

"This seems to me to be begging the question, but to revert, let us see what we have. With the potential of more than 4,000,000 barrels daily, supposing that we conclude to accept but 10 per cent of this figure as the actual potential. Surely all will admit that this is absurdly low. We still have a potential of more than 400,000 barrels.

"Now then, we have but one well to 54 acres. If we are to consider drilling one well to 10 acres then we must at least multiply our 400,000 barrels by five, which brings us back to 2,000,000 barrels; and it is the opinion of the writer that the Yates field easily could be made to produce more than this amount of oil for a very considerable time.

"Today in the Yates field there are small operators who insist on having a greater than their proportional share of the production, insisting that, were it not for the maladministration of this method of production, they could sell their own oil and would be in a very favorable position.

"Seemingly, they have quite overlooked the fact that had those individuals owning the major portion of the field adopted similar views, and had they utilized their resources to produce this oil and thrown it on an already overburdened market, their crude would have had no value whatever.

"But the fact is, there is no force today but that of persuasion to bring the selfish and non-cooperatively minded operator into line; and, as a result, in this year and a half of proration the friends of order have had to pay its bills.

"Any one man or agency was sufficient to disrupt the whole plan and if he sought a selfish end there was no way but to persuade him to forego his demands or to grant them—and to grant them always at the expense of the fellow who was trying to establish stability in the industry.

"Now I think we should end with this tipping system and endeavor to arrive at some organization which will have the power to do the equitable thing in all cases. There is a distinct doubt in my mind whether or not we should go about this by creating other laws to meet the conditions.

"Laws once written are very inflexible things, even lending themselves to much dispute as to their meaning. Unwritten laws (perhaps it would be better to say unwritten constitutions) are much more useful than written ones, because they are more flexible and lend themselves more accurately to the exigencies of any particular situation, especially when conditions are changing.

"For this reason, I would suggest that we canvass the situation in an endeavor to create an organization which will have the support and the sympathy of the industry, and the public which it serves, without endeavoring to write into the laws of any state or the nation any additional statute which would endeavor to say definitely and finally just what we may or may not do.

"It further seems to me that the American Petroleum Institute is the instrument which should lend itself to this general scheme. The head of the A.P.I. organization could well be the pinnacle of this structure, which would keep in touch with the various fields by committees of operators.

"Each field might have its committee as it has today, and each state a central committee, which in turn would consult with a national committee presided over by the head of the A.P.I.

"We would expect this chairman to be of such standing as would demand the attention of the whole country and the confidence and respect of the operators. Let it be understood that decisions made at his instance are irrevocable and are to be subscribed to by all concerned."

Cooperation in Producing Makes Headway In Rocky Mountains

CHICAGO, Dec. 8

COOPERATIVE effort in the Rocky Mountain territory has well passed the stage of discussion and through the accomplishments of several years has become settled fact, S. H. Keoughan, president of the Continental Oil Co., Denver, told the A.P.I. division of development and production engineering on Dec. 5.

He established the fact that unit operation in Wyoming is simpler than in many other sections, due to the small area of most of the fields and their control by one or a few companies. "This makes it possible," said Mr. Keoughan, for a very few operating companies to get together and agree upon any program of prorating and curtailment which seems sensible and economical in the light of conditions from time to time existing. For that reason, before there was any general discussion of unit operation, gas conservation, prorating and curtailment, the Rocky Mountain operators had entered into a variety of agreements of this character. By way of illustration, the deep sand at Grass Creek, Elk Basin and Little Buffalo Basin fields in Wyoming may be mentioned.

"The Rocky Mountain operators are at present engaged in an attempt to work out some proper prorating of the Oregon Basin field in Wyoming. Many of the operators who recently met for the purpose of discussing a prorating agreement in Oregon Basin, sat around the same table when the question of prorating Salt Creek arose several years before, and many matters which were then the subject of heated, and at times acrimonious debate, are now taken as settled."

There is, in the broad sense, no overproduction problem in the Rocky Mountain states, Mr. Keoughan brought out. There is a considerable quantity of "black" oil shut in, as the low price for which it sells does not justify its production. Local production, he said, has pretty well caught up with local consumption. Salt Creek contains a considerable amount of light oil developed but not being produced, but it is a reserve that fits the refining operations of the Standard Oil Co. of Indiana. Daily shut in production he estimated as follows:

Light Oil	
Hogback, N. M.	250 bbls.
Rattlesnake, N. M.	1,000
Salt Creek, Wyo.	75,000
Heavy Oil	
Iles, Colo.	6,000 bbls.
Hamilton Dome, Wyo.	900
Mule Creek, Wyo.	900
Oregon Basin, Wyo.	7,500
Grass Creek, Wyo.	6,500
Soap Creek, Mont.	1,500

Other shut in heavy oil at Maverick Springs, Wyo. and Sunshine, Wyo. Not estimated as no reliable tests have been made.

The economic problem in the Rocky Mountain territory at this time lies in the heavy oil, Mr. Keoughan said. They could be utilized by local refineries, so far as gasoline content is concerned, but the fuel oil residue, the larger percentage of these oils, is unsalable at a fair price. Industrial users are few and the railroads can get plenty of cheap coal.

"For example," said Mr. Keoughan, "in the Oregon Basin field of Wyoming, the cost of the wells will probably average in excess of $50,000 each, and the field price which any refinery is now warranted in paying for any considerable quantity of the crude oil, in view of the fuel oil problems presented, is wholly disproportionate to the drilling and production costs. The Rocky Mountain operators feel that these heavy oils will eventually have a value, but the immediate outlook is not very encouraging to the producer."

Program Suggested for World Cooperation

WORLD cooperation in the development of petroleum resources, as a means of stabilizing the oil industry in this and other countries and of properly conserving this natural resource, was the theme of the address of Sir John Cadman, chairman, Anglo-Persian Oil Co., London, at the annual banquet of the American Petroleum Institute, Chicago, Dec. 6.

Such world cooperation could be worked out along three lines, he said.

First, develop the resources in various countries in line with demands of the natural market for supplies from this source.

Second, readjust sea transportation to eliminate long hauls to uneconomic markets.

Third, insure that the stronger nations, in their development of oil resources in weaker countries, help to bring about the orderly development of the weaker nation's resources, with true conservation in mind.

This is the second time Sir John Cadman has appeared before an institute audience. Having been in charge of distribution of petroleum supplies in England during the war, he came to this country not long after its close.

Intangible as this international program may appear to many, something of a start was made this summer when Sir John, with leaders in the oil industry in this and other countries, met in Scotland to discuss world problems.

He referred also in his address to the Turkish Petroleum Co., owned by oil companies in this country, England and France, which is developing the Iraq fields, as bringing "sanity and sense to bear on the oil problems of Iraq."

That portion of his address dealing with the world problem follows:

Petroleum Problems Outside the U. S.

By Sir John Cadman

Chairman Anglo-Persian Oil Co., England

Before American Petroleum Institute Banquet, Chicago, Dec. 6

* * *

IT IS a fact of the first importance that the face of the globe is now drenched with a commodity, which, although necessary to life, involves but an irregular and sometimes meager expenditure of life in its primary production.

New uses for it spring up overnight. No man can foresee the ultimate limits of its utility. The ancient sources of light and heat—for example, coal—have had to take account of it, and may well have to come to terms with it.

Here is one of the essentials of life, therefore, of which it can be said that it betrays an economic characteristic that is novel—almost unique. In short, the supply not only stimulates the demand: within limits, it creates it. In large measure, accessibility and cheapness of supply stimulate consumption with a directness for which no precedent can be found in the entire history of industry.

But, none the less, there are limits, and there is a penalty for exceeding them. The checks imposed upon excess, although far from automatic in their incidence, are frequently not so much corrective as punitive in their effect. The limits of economic operation are hard to trace and impossible to fix with permanence. Many operators are therefore tempted blindly to ignore them, although to overrun them is to invoke Nemesis.

To the confusion of thought which I have described is directly due the possibility of "overproduction," with all its attendant evils. I expect that whenever you hear that word it induces in you a sense of fatigue, and I shall be as brief as possible in dealing with it. Nevertheless, there is no escape from it; because, beyond as well as within the United States, it is one of the most urgent, although not in fact the most vexatious of all our problems.

Given a proper appreciation of the laws to which I have referred, it ought never to have arisen. I suppose, however, it is not really surprising that many minds should have been mesmerized by the idea that the greatest and quickest production of this marvellous new commodity must somehow be the best thing for mankind as a whole; so resilient appears to be the demand, so far remote the industrial saturation point. But it is high time for us to seek and to spread some enlightenment on this subject.

In the light of all these considerations, let us examine the statistics of the last few years.

Among producing countries other than the United States, there are several to which a special importance attaches by virtue of their production and distribution. During the last six years, only one of these countries, namely Mexico, has not shown an increasing output. In 1922, Mexico produced some 27 million tons of crude, and ranked second among the world's producers; by 1927 her production had fallen to 9 million—an almost phenomenal decrease of 18 millions.

Nevertheless, Mexico still remains an exporter of oil and a considerable factor in the world's petroleum affairs. To the extent to which production exceeds consumption, however, it finds a natural export market. On the other hand, great productivity, both actual and potential, was revealed elsewhere. In Iraq high possibility developed into definite potentiality—a fact of which in due course we shall all have to take account.

In six actual producing countries, a survey of the years 1922 to 1927 shows the very opposite of that which has occurred in Mexico. In 1922, Venezuela and Colombia together produced less than 400,000 tons of crude. By 1927, production had risen to over 11 million, and they had become exporters, sending their produce chiefly to other countries in America and to Europe.

In Roumania, during the period, production has nearly trebled, the figure for 1927 being over 3½ million, of which about two-thirds were exported to Europe and Africa.

The production of Russia, also, has grown during these six years, thus in some measure recovering pre-war dimensions. Its output of crude in 1922 —4½ millions—was more than doubled in 1927, and the exportable surplus of Russia's products—like that of Roumania—also found its principal outlets in Europe and Northern Africa.

The Dutch East Indies—an old-

established and stable producer—is less remarkable than some in its recent fluctuations. Production there has increased by only one-third, to 3½ million tons; but the ultimate distribution of oil from these islands, although mainly concentrated in Asia, reaches also to the extreme points of England and Australia.

In Persia—a country of whose petroleum affairs I can speak with a measure of authority—production has risen from 2¾ to 5¼ millions—a rise strictly regulated in terms of the internal consumption, which is low, and of the steadily increasing export demand, which is far from low.

ONE-HALF the quantity exported from Persia is consumed in Europe. The more adjacent markets of Asia and Africa absorb 30 per cent; and fractions of the remainder are widely distributed about the globe, some to Iceland and some past the Dutch East Indies to Australia—a dispersal which I for one would be pleased to see undergo some concentration.

The seven countries I have mentioned are—after the United States—the principal producers of the world. Taking them as a whole and setting off the decreased production in Mexico against the increases elsewhere, in 1927 as compared with 1922 there was a net increase in production of about five million tons. Moreover, in all the producing countries of the world, other than the United States, production has increased to the relatively small extent of some seven and a half millions in the space of six years; whereas the increase in the United States is no less than 47 million tons.

I revert for a moment to Persia, where a useful illustration of my argument may be found. I can assure you in all seriousness that in that country, where the ultimate resources are far richer than it would be proper for me to indicate to you, exhaustion of an economic, if not of a material character would have been reached in a comparatively small number of years if, unfortunately, Persia had become a focus of just such economic conditions as have prevailed in certain other countries.

Compare with that the picture of the results of offsetting, say in Roumania, or in Venezuela. Looked at in world terms, the thing is an economic scandal.

To this audience, fresh from the experiences of the last few years, I suppose it is scarcely necessary to suggest—as I have done from another platform—that in the long run "it profits nobody that there should be alternate waves of overproduction and underproduction, of high prices and low prices, of big profits and of little or no profits.

I can speak feelingly when I say that particularly in that part of the extra-U. S. world which still suffers from the Great War and its aftermath, these conditions of instability are most deeply to be deplored. I would address myself now, not only to this audience, but to any other listeners whom my words may ultimately reach.

Sir John Cadman

"Nevertheless, I plead, in quite general terms, for a sane nationalism: regarding oil neither as a heady intoxicant for oneself nor as a deadly drug for one's political competitors, but rather as a store of energy to be conserved, released and applied as a part of a concerted operation and therefore yielding its tribute to more than one treasury.—Cadman.

Surely the present generation will realize that oil is no longer to be regarded as a new, a potent and a fascinating toy. Are we not—and I refer particularly to those of us who have some pretensions to scientific knowledge—are we not, in our generation, the trustees and storekeepers for posterity? I do not hesitate to say that the effect of the methods adopted in recent years in certain centers of spendthrift production amounts to a robbing of the birthright of future generations. Gentlemen, we must realize that in dissipating natural resources in this way, we are not only squandering the revenues of our contemporaries. We are, in fact, destroying for all time one of the most precious capital assets of Mother Earth.

In violent contrast with these "methods of barbarism," what a relief it is to think for a moment of the sanity and sense to be brought permanently to bear on the oil problems of Iraq! Breadth of outlook and unity of aim will, of course, be invaluable when that country becomes a substantial producer. In terms of present indications, it is feasible to contemplate a volume of production amounting to some millions of tons in the relatively near future—say four or five years hence.

If and when that comes about, there is no doubt that the office of trust accepted by all those nations interested in the development of Iraq will require that an outlet, and a permanent outlet, be found for Iraq's production. This problem is one in which we are all interested, and not only the primary problem, but all its consequential issues will have to be taken into account by the principal parties.

With the agreeable thought of Mesopotamian cooperation uppermost in our minds, I now with your permission take leave of the vexed question of world-production—although only for a few minutes.

A factor of increasing menace outside the United States is the absence so far, of any recognizable policy governing the extent of storage facilities. Up to date, the number of tanks, for example, has always been settled in a manner purely arbitrary, by reference sometimes solely to potential production; sometimes to distribution; and on other occasions without reference to any ascertainable principle whatever.

All this was understandable during the period of the industry's economic minority, so to speak; but when, as now, it has attained to years of discretion as a world industry, something a little more rational would be only decent. Without attempting to dogmatize, in a "Parliament of Oil" I would gladly suggest as the starting point for debate this motion:

"Resolved that we keep in view as a guiding principle one dominating factor, namely, the desirability of conserving deposits, once discovered, not in imperfect containers constructed on the surface of the earth, but, so far as practicable, in that great and perfect reservoir which Nature herself has provided."

* * *

I NOW approach one of the very greatest of our problems—or, rather, of our possibilities. It relates to the realm of transportation by sea. There, economies which are significant, if not vast, can undoubtedly be effected. It is a direction to which the minds of the more thoughtful among us frequently turn, and toward which, during the Great War, we were remorselessly impelled.

Can it be seriously contended—if we think for a moment in terms of the world—that, as a matter of permanent procedure, American oil should find its way to India, or Persian oil

to Iceland? In countless similar instances which will occur to you, you will find a clear waste of strength, a perpetual straining against the facts of geography, a lamentable lack of coordination.

But these things happen, and must continue to happen, so long as those of us who are convinced, in theory, of the need for larger views and for world-wide surveys, find no opportunity of turning theory, by coordinated effort, into effectual practice; and so the world expects and condones these anomalies. In recent years many unprejudiced thinkers have reached the opinion that a better way is both possible and attainable. The subject is, of course, one which calls for the highest skill and the ripest experience to be found within the respective organizations. But, given that, I know the problem can quite definitely be solved.

I speak with all the greater confidence because I can remember so well the ingenuity and devotion that were brought to bear upon a similar task ten or eleven years ago—at a time of acutest crisis during the Great War—for achieving the greatest attainable measure of economy in the use of all the tank steamers plying the waters of the world. Then, so far as carriage by sea was concerned, this particular problem was absolutely solved!

I SHALL only touch upon a profoundly important topic to which the subject of sea-transportation naturally leads us. Even before we attain a sane "economic" of the sea, we must consider how far it might prove feasible to relate the consuming areas of the world to the respective production centers with which Nature would seem to have linked them in traceable affinity.

Why should we not address ourselves to the task of finding for every market the "nearest source of supply"—that is to say, the nearest, taking account of all relevant economic considerations? If that task should prove feasible—and I, for one, do not shrink from it—and we can reconcile vested interests to take real account of it, we shall indeed deserve well of our contemporaries and do something to earn the gratitude of posterity.

Gentlemen, from what I have said you will understand that our problems outside the United States are to be found at every stage, from oil-winning, through sea-transportation—and land-distribution, until the consumer is reached. If I were asked to say which are the most vexatious, I think I would give my vote to those of sea-transport and land-service.

Nor do they stop at distribution. The state of mind of the consumer is an important factor. But who am I to speak of that? Gentlemen, in this particular matter the interests of the seller and of the purchaser are most certainly comparable even if they are not quite identical. That is a bold statement—one which provokes query and excites ridicule, but will, I think, sustain inquiry.

Even the most elementary considerations of business prudence dictate a policy by which the interests of the consumer must in the long run be reconciled with the interests of the supplier. That is true of every commodity. It is particularly true of a commodity which in many of its grades competes with alternative commodities and within whose grades competition rages as between the lower-priced and the higher-priced. I raise that point, therefore, only in order to clear the ground by dismissing it.

I do not know whether the term "problem" correctly describes that group of complex movements having their origin in the vivid sense of nationalism which during the last ten years has acquired acuteness and strength in many countries. Certainly its application to many of the phenomena of industrial life produces quite a crop of problems. I may therefore say a word or two about its fundamental justification; and also about the inherent peril of over-indulgence and misapplication.

NOW that oil as a bulwark of civilization is everywhere recognized, it is understandable and natural that the discovery of petroleum deposits within any country should stir the imagination of that country's citizens; and to some extent should preoccupy their minds with the thought of the rights and advantages which such geographical custody ought to bring.

Moreover, the coming of the oil era has been relatively so sudden that some disturbance of mental poise and muddling of economic thought are for a time, at any rate, to be excused, if not condoned. Or shall I say they could well be pardoned in the years when the subject of oil as a comprehensive world-influence, as distinct from oil technology, was very scantily dealt with in works of reference or in the pages of enlightened journalism? What are the merits of this matter? Let me try to appraise them.

For a country to possess potential oil supplies of a quantity far in excess of anything its own population can ever consume, is obviously an economic fact of the utmost importance. The Great War demonstrated that it can also be a political fact of great significance—although, I confess, the more striking truth that the means of technical development, of transport, storage and organized distribution, are of still greater value seems to have escaped the attention it deserves.

ANYHOW, we can start by suggesting that so soon as a nation's oil resources are discovered, their forces tamed and harnessed, and the process of extraction reduced to a matter of routine, that nation is within her rights in conserving an ample measure of these resources for the greater safety of her realm.

And that brings me straight to the next point. Except in countries so equipped financially and technically as, say, the United States or Great Britain (and the title of my speech compels me to get away from the former now and then), it is always extremely difficult and often quite impossible for that minimum national security to be attained without first invoking the aid—in three dimensions, so to speak—of foreign nationals. Finance; experienced mechanical skill; and some form of adjustment to marketing conditions in relation to former imports and to possible exports—all these are essential pre-requisites.

Without them the dream even of a

Over-Development of Distribution Facilities Is Problem in England, Too

(from Sir John Cadman's address before A. P. I.)

"..... another factor whose growth has caused the utmost concern to those of us who are apostles of conservation and not of waste—I mean the absolutely unlimited multiplication of facilities for the so-called 'service' of the motorist.

"At times one begins to wonder whether there is supposed to be some obscure virtue in piling up the number of pumps, of rail and road wagons, and of service stations. If there is, I confess that all the thought I have devoted to the subject has failed to show me what it is.

"This is an evil with which you are doubtless familiar here, and I am not in a position to say whose form of it is the more virulent. Be that as it may, for more than one reason the time has come to call a halt."

self-supporting indigenous oil supply is vain. Why, the value of no commodity can ever be judged apart from the entire economic structure of which it is the foundation; and although the foundation-stone is important, it is not the whole building. Moreover, I am reminded of the gap that separates the value of sweet water in the Egyptian irrigation areas, from, say, the value of brine in mid-Atlantic. Again, need I mention the gold that can undoubtedly be won from some of the remote mountain streams of Scotland, but remains there undisturbed because of the prohibitive cost of extraction?

I really must apologize for harboring ideas so elementary; but I do want to illustrate, as simply and forcibly as I can, the fundamental fact that, in a country of small consumptive power, the mere possession of natural oil is of itself an asset only in so far as a whole complex of external conditions makes it so.

Without hundreds of investors willing to lose four times out of five in the hope that at the fifth they will make good their losses; without the instruction of a whole faculty of technical resource, founded and developed in other countries—or, it may be, in another hemisphere; without an army of pioneers who have adjusted the needs of man to the character of the product and vice versa; without a network of distributive systems having been traced upon the face of the globe—without every one of these things, the oil deposits, priceless as they are potentially, might just as well have been deeply buried in the moon.

Gentlemen, it is not for me to strike a balance as between these things. In this matter no dogma is sound, nor is it needed.

Nevertheless, I plead, in quite general terms, for a sane nationalism: regarding oil neither as a heady intoxicant for oneself nor as a deadly drug for one's political competitors, but rather as a store of energy to be conserved, released and applied as part of a concerted operation owing its inception to more than one nation, and therefore yielding its tribute to more than one treasury.

AS I have said, I think that conception of nationalism is coming; I think we have passed the peak of expropriatory legislation and of penal ordinance. But if more enlightened ideas are to become permanently established, we must all do our share towards promoting a policy of sane and honest inter-nationalism in industry.

To sink identity and to start a communistic or syndicalistic system of oil-utilization is, however, the very last thing I would advocate. Stereotyped forms of cooperation, nationally and internationally, would be stupid, even if they were not absurd. But cooperation between national and international forces, there must be, in some form or other, if we are not to squander the world's heritage.

What we want here is something elastic, a basis of common effort that yet takes account of difference in status and difference in capacity, excluding no one merely because he is small and vilifying no one merely because he may be big.

Gentlemen, if you expected me to speak of difficult and pressing problems, I am sure you have not been altogether disappointed.

If my observations about the operation of economic law have any truth in them at all, I think no room is left for doubt as to what are the solvents of our problems—"Economic cooperation" and "the nearest source of supply." Interpret these guiding principles broadly enough, gentlemen, and our problems are gone.

THERE is only one place where all these problems can be assembled, comprehended, and effectively tackled—and that is round a table. Well, already some of us have sat round a table in order to discuss them, and I hope we shall do the same thing again and as often as may be necessary. But let me make it clear that that table is not a small one; nor are all its places filled.

As we approach a solution to our problems, let us never forget what we owe to the nations within whose boundaries we may be called upon to operate. Between them and us, goodwill, and nothing but goodwill, can avail us. And I would assure you goodwill is attainable. I think of Persia, a nation of immense antiquity and—so one might think—of obscure psychology; and I tell you it is a real pleasure to encounter the opinions and to accept the contribution to thought that the Anglo-Persia Oil Co. receives continually from the enlightened representatives of that nation, a contribution which in intelligence and pertinence would stand comparison with that from any Western nation.

Gentlemen, we must go on, undeterred by calumny, unaffected by misrepresentation, fortified by goodwill. I hope you are all with me on the principle of this all-important matter. The task needs goodwill everywhere. In the East, I assure you, we are doing what we can. As showing the efforts we are making towards a solution of our own problems, I need only mention recent developments—of which doubtless you have heard—affecting India, Africa and adjacent markets.

If in a few words I may point out the high lights of the picture I have tried to paint, I would say this: Our problems outside the United States are neither novel nor obscure. They form the complement of your own problems. They arise from the lack of invariable proximity—apparently ordained by Nature—as between the main consuming areas and the chief centers of supply, as well as the persistence with which, in the United States itself, demand forges ahead only to be overtaken by supply.

The issues can be clearly discerned. On the whole they are uncomplicated by state interference in the greater countries, or by corporate antagonism among the greater groups—or, indeed, by any need for antagonism outside them. In the countries that are potentially great in petroleum but otherwise of limited stature, we must not be surprised if understanding becomes complete only after a period of close contact and of frank revelation of aim. After all, within our own domestic boundaries, understanding was not reached in a day.

Among our problems we number many single individuals: The financier with the fever for "quick returns" and "to perdition with posterity"; the conscientious individualist whose blood pressure rockets at the idea of combination, well content to condone waste, muddle and costly inefficiency if only the concern practicing these be small enough. Such men we have always with us. Happily, as we grapple with our problems, we are not without helpful allies. Within living memory, many world problems have found their solution only after the United States has lent a hand. So it must be again.

Let us therefore carry on; but remembering always that the individual consumer cannot be expected to sympathize with "long views" unless it is made clear to him that they converge necessarily upon stable and rational prices. In our escape from the obsession of political boundaries, let us remember that in terms of economics, home is the first, though not always the best, market.

Remembering, indeed, that for oil as a universal "element" there are no real boundaries except those that are economic, let us not rest content till we have redrawn the map of that one great oil country—the world.

Quaker State Jobbers To Meet

GREENSBORO, N. C., Dec. 10.—A conference for its 22 jobbers and salesmen will be held by L. H. Martin, Inc., state distributor for Quaker State motor oils at the O'Henry hotel, Greensboro, Dec. 20, according to L. H. Martin, president. Charles H. Newton, southern representative for the Quaker State Oil Refining Co., will attend the meeting.

Veteran Grease Salesman Dies

CLEVELAND, Dec. 10.—J. D. Anderson, who had been in the grease business for more than 30 years. and for 15 years with the Stevens Grease & Oil Co. here, died recently. Mr. Anderson was of the old school of salesmen and was known throughout the industry, according to A. Roy Allison, sales manager.

The Editors' Viewpoint

National Petroleum News

Balancing Output With Demand

HIGHER executives of the larger oil companies are coming more and more to realize the vital basic place of the tank car refinery market in the economic structure of the oil industry. That is one reason why conditions in the industry are improving and why they look still better for the future, even though there are, as always, a few clouds on the horizon.

Many oil men for years thought only of producing crude oil, then of refining that crude and then of selling the products through their own stations. Just what and where and why the tank car market was, did not enter their minds. The result was that the tank car market frequently went to pieces through a flood of surplus gasoline thrown on it, and price cutting and unnecessary competition sprang up all over the country and made the oil company-owned distributing stations mighty sick financially.

Many an oil executive who would not think of throwing more of his company's shares on the stock market than he knew it could easily absorb, would blithely chuck train load after train load of gasoline on a market he knew neither the extent nor the character of and then rail at the sales department for not getting better prices. If he had thrown a train load of his own shares on the stock market he would not have expected a good price, or possibly even to sell all of them, but he seemed to think that the tank car market was something different; that it could go on forever absorbing unlimited quantities of gasoline at good prices.

The tank car market has for its buyers ONLY oil marketers who own bulk stations, refiners similarly equipped but not always refining all the gasoline they need, some large consumers and exporters. These can and will only buy what they can sell to the public and the public will buy only what it can consume. That consumption can be easily predicted from month to month and year to year for any marketing territory from the wealth of statistics available on gasoline consumption and the sale of motor cars.

When a crude oil producing company cannot sell its crude it means that the distributing companies cannot get the public to buy any more gasoline than they are buying. It does the situation no good for the producer to get mad, as he has scores of times in past years, and build his own refinery, because it means that every car of gasoline that he manufactures must stay in his own tanks, unsold, or stay in the tanks of some other refining company, unsold.

As the gasoline consumption increases gradually over a period he probably will get a part of this increase and be absorbed into the oil industry, but until his capacity has all been absorbed without reducing some other refiner's output, the prices will be low and must be low.

The tank car price is not governed by what it costs to make the product; it is controlled solely by the balance of the supply against the demand, as all other commodity prices are.

All of this is quite elemental but it is surprising the large number of oil men who have not grasped it and even who do not seem to see it clearly today. But the number who do see it and who are applying it in their business every day is increasing.

That is why there has been a good, stiff price obtaining in Group 3 Oklahoma on gasoline this summer and fall and that is why there is every reason to believe that it will continue at some remunerative level instead of dropping way below cost as it has in previous years.

The Mid-Continent refiners, after years of blind and unthinking struggle against the operation of the law of supply and demand, finally saw that law and how it controlled their business like all others. Since that time these refiners have endeavored to keep their production of gasoline in balance with the demand for it. This has been easily possible by reason of all the statistics which are available, an end for which the statistics are gathered in the first place by government as well as by private agencies.

The whole industry is doing a better job of balancing its operations against demand today and that is why the business is looking up and why it should continue to do so.—W. C. P.

Why "Super" Anyhow?

EVERY once in a while, quite often, in fact, this editorial department receives a letter that stumps it to answer. Today brings one such from Hubert C. Persons, of the John S. King Co., advertising agents, Cleveland.

"For a good many months," writes Mr. Persons, "we have been hearing and reading about Super-service stations, super-service garages, super-service tire shops and what not. We have our own ideas about what all this means, but we would like very much to see somebody define super-service."

That's a fair question and we would like to oblige with an answer. We've tried it. Maybe some of our readers have a handy definition ready. If so, after they have given it to us, we want to reserve the right to take them, in their own car, to some few of the places that flamboyantly announce themselves as "super" this or "super" that, to see if they do not change their definition after their experience. We've tried that too.

Personally, our feeling in the matter is such that we try to avoid a place of business that puts itself in the "super" class. We've had our experience with so-called "super" insurance salesmen, "super" cars, "super" washing machines, and so on. It seems to us that "super" has been used as an adjective so much that its individuality has been entirely worn off. It has been pulled and hauled to fit so many different objects and lines of business that it has no shape of its own. It counts for about as much as "the" does before a name.

Our own idea of it is that the oil marketing industry could use "gasoline station" to define a place where the business is limited to selling gasoline and oil and changing the oil in the crankcase, and that it could apply the term "service station" to its places of business where such services are offered as greasing, car washing, battery and tire service and so on.—V. B. G.

Oklahoma City and Wichita Wildcats Mid-Continent Sensations

By John Power
N. P. N. STAFF WRITER

TULSA, Dec. 8

TWO big wildcats, each with initial production measurable in thousands of barrels, combined to make the past week one of the most active the Mid-Continent oil industry has seen for some time.

Less than a day separated the completion of the two wells. The first was a wildcat test put down by the Marland Production Co. in Sedgwick county, Kan., about six miles northeast of the Wright pool, discovered last summer near Wichita.

The second well, which blew in the afternoon of Dec. 4, was the Indian Territory Illuminating Oil Co.-Foster Petroleum Corp. deep test near Oklahoma City. A detailed article on these two wells, both of which are completely shut in at present, is to be found elsewhere in NATIONAL PETROLEUM NEWS this week.

The Marland Production Co. No. 1 Goodrich, the first of these wells, is something of a mystery even at this date, four days after its discovery. The producing formation is unknown, as no showings of any kind were encountered at this depth in the wells of the Wright pool, in 26S-1W. The well has many of the characteristics of a chat producer—there is little gas with the oil, but a lot of pressure, indicative of a water pressure behind the oil, plus the high temperature of the oil for production flowed through 8-inch casing. The crude is about 37 degrees A.P.I. gravity.

Oil men who have visited the well, however, are not ready to commit themselves as to the nature of the producing formation. But chat, siliceous lime or sand, whatever it is, the Marland Production Co. is sitting pretty, as it owns leases on 3700 acres or more surrounding the new well in all directions.

The operators of the other wildcat strike of the week, the Indian Territory Illuminating Oil Co. and the Foster Petroleum Corp. are also in an excellent position to control to a certain extent the future development of the field. The holdings of these companies, comprising some 10,000 acres, can be offset but 29 times, except on the extreme outer limits.

As soon as pipe line facilities are arranged, it is reported this well will be deepened to the Wilcox, as its production is now coming from the Simpson sand immediately above the Wilcox, if the well conforms to those drilled in the Seminole area.

Another Simpson well, almost as good as the Oklahoma City wildcat, is reported in the St. Louis pool. It is the Prairie Oil and Gas Co. No. 8 Gammon, which is starting off at the rate of 200 barrels per hour from the Simpson from 4120 to 4129 feet. The new well is an inside location, in the SW SE NW of 30-7N-5E. It is surrounded on all sides by production, although none of the offsets were anything like as good wells as this initially.

Production from the field fell off sharply for the 24 hours ending 7 a.m. Dec. 7. This decline was largely due, however, to trouble in the airlift plant on the Independent Oil & Gas Co. Youts lease in 19-7-5, far and away the best lease in the field. The addition of three wells in the 7N-4E extension to the Wilcox area was not enough to make up for the slump in the Independent's production. The Texas Co. has two of the three wells and the Shaffer Oil & Refining Co., one. The Texas Co. No. 3 Cherry, the best of the lot, in the NE NW NW of 25-7-4, is flowing about 60 barrels per hour, after having an initial of 70 barrels hourly. Top of the Wilcox was at 4318 feet, drilled to 4332. A comparative table of Wilcox production by leases is given.

Company	Lease	Loc.	Wells	Prod. Dec. 7	Prod. Nov. 30
Barnsdall	Stahl	30-7-5	2	2,054	1,797
Gypsy-Sinclair	Stahl	30-7-5	5	11,472	12,072
Phillips	Stahl	30-7-5	2	710	off
Sinclair	Blandin	24-7-4	2	3,130	4,815
Sinclair	Nadash	20-7-5	1	270	280
Magnolia	Hembree	19-7-5	4	5,715	6,319
Magnolia	H. E. Youts	20-7-5	5	7,453	7,839
Magnolia	C. A. Youts	20-7-5	2	680	700
Magnolia	T. Fyke "A"	20-7-5	1	.....	153
Magnolia	T. Fyke "B"	20-7-5	1	3,015	3,864
Magnolia	Cherry "A"	26-7-4	1	4,407	4,412
Slick	Hembree	19-7-5	4	14,805	15,007
Slick	Youts	19-7-5	2	1,942	1,440
Mid-Continent	Guinn	20-7-5	2	950	890
Pure Oil Co.	Thomas	26-7-4	2	3,290	3,675
Independent	Youts	19-7-5	8	4,480	20,700
Prairie	Wolfe	20-7-5	4	3,705	3,725
Roxana	Smith	21-7-5	1	340	656
Shaffer	Cherry	23-7-4	2	1,585	80
Texas Co.	Cherry	25-7-4	3	4,785	3,370
			53	84,518	92,754

South of the new Wilcox producing area in 7N-4E the Prairie Oil & Gas Co. has a dry hole in its No. 1 Richards. This test gave early indications of being a producer, when a good show of oil was encountered at 4193 feet. However, when deepened to 4280, the hole filled with water. It is in the SW SE SE of 27-7-4, southeast a mile of the St. Louis Wilcox extension.

The Misener sand pool, in Twp. 8N-5E, is proving to be a better oil field than some of the previous history of the Misener sand would indicate. Two new wells in the field are both excellent producers. The Independent Oil & Gas Co. No. 1 Harding, in the SE NW of 18-8-5, is doing better than 1300 barrels daily from the Misener topped at 4169 feet and drilled to 4173 feet.

THIS new producer is a half mile north and a quarter west of the discovery well, and a half mile north of the nearest production. Its chief importance lies in the fact that it is in almost a direct line between the Pure Oil Co. discovery well in the SE SW SE of 18-8-5, and the Amerada well in the NE SE SE of 1-8-4, more than two miles to the north and west of the discovery. The Pure Oil Co. well is doing better than 2200 barrels every day on open flow, while the Amerada producer, the best well in the field, is holding up to better than 3700 barrels every day.

With the Independent's well lying in between these two, it appears that a very considerable area will produce from the Misener in this neck of the woods. The third point of the triangle, the Amerada No. 1 Gosland, in the NE SW of 8-8-5, which is being drilled to the Wilcox, is flowing better than 600 barrels per day

from the Misener, which has been Bradenheaded between the six and eight-inch casing.

The other well in the field is the Sinclair Oil & Gas Co. No. 1 Bellars, in the NE NW NE of 19-8-5, a south offset to the discovery well. It is doing 90 barrels per hour from the Misener topped at 4108, and drilled to 4122 feet. It is the farthest south of the producers in the new field.

Further information as to the southern possibilities of the field may be gathered during the next week or ten days, as the White Eagle Oil & Refining Co. has a well drilling in the NW SE of 20-8-5, half a mile south and three quarters of a mile east of the Sinclair oiler, and in the northwest-southeast trend which the best producers from the Misener sand seem to have established. At last reports the White Eagle was drilling at about 4000 feet, having topped the Mayes lime at 3920 feet.

THE Earlsboro sand continues to provide sweet spots on the edge of the original Earlsboro pool. The Magnolia Petroleum Co. has a good well on the southeast edge of the pool, a quarter mile south of production. The well, the Magnolia No. 1 Gillam, had the Earlsboro sand at 4198 to 4225 feet and is doing better than 3500 barrels daily on air. It is in the NW NE SW of 13-9N-5E. There have been no dry holes drilled south, east or west for at least a mile, so that the new producer will probably be the cause of a small but intensive drilling campaign. The northeast edge of the field did not fare so well, however. The No. 1 Rentie of McCulloch et al., in the NE NW NW of 7-9-6, had a hole full of water in the Misener, encountered at 4070 feet.

While of course the Marland Production Co. well in Sedgwick county overshadowed other oil happenings in Kansas, the week saw two more important completions. The Bu-Vi-Bar et al. No. 2 Lyons, in the Wright pool, is a producer, good for 45 barrels an hour. The new well, the southeast offset to the discovery well in the pool, is in the NW SW SW of 7-26S-1E, and is the third well in the Wright pool. There is one more well drilling in the pool proper, the south offset to the discovery well. It should be completed before long.

Near Winfield, in Cowley county, the Prairie Oil and Gas Co. has a well flowing 35 barrels an hour from what is said to be either the siliceous or the Wilcox sand. The pay was encountered at 3277-80. The producer, the No. 2 Graham, is in the SE SW SW of 10-32S-4E. Two locations east is the No. 1 Graham, a dry hole in the Wilcox at 3313 feet. The Wilcox has not been explored in the other directions however, nearest production being from a series of shallow sands due east of the town of Winfield.

Mid-Continent Notes on the Week

The area between the Little River pool and the St. Louis field was further condemned by a dry hole drilled in the SW NE SW of 14-7N-5E by the Champlin Refining Co. The failure had a hole full of water in the Simpson at 4253.

* * *

The Silurian Oil Co. et al No. 1 Anthis, in the SW NE of 6-19N-7E, has 600 feet of oil in the hole after topping the pay at 3098 feet. The well is a diagonal offset to the discovery well in the extension to the Cushing field which the Silurian and associates opened up some weeks ago.

* * *

Garvin county, in the south-central portion of Oklahoma took one on the chin during the week. The Garland Oil Co. No. 1 Strickland had a hole full of water from the Wilcox at 3488. The failure is in the SW NW SW of 10-4N-3E.

* * *

The wildcat well of the Phillips Petroleum Co. in Ellis county, Kans., is swabbing 280 barrels daily. It is in section 5-12S-17W.

* * *

Prairie Pipe Line Co. reported crude oil deliveries in November of 5,461,566 barrels, or a daily average of 182,052 barrels. The October daily average was 201,754. The decline was due in part to the seasonal lessening of demand, and in part to mechanical trouble at one of the company's main line stations.

* * *

There is nearly 500 feet of open hole in the Marland No. 1D Goodrich, the sensational wildcat producer in Sedgwick county. Eight-inch was set at 2567 feet and the well is producing from 3010-3020.

An oil and water separator in common use in some of the Los Angeles basis fields is shown in this picture. It is of a type made by the companies themselves in their own machine shops, using old drill pipe

Equipment Given Credit For New Oil Fields

CHICAGO, Dec. 6.—Fulfillment of the geologist's dream, the insured drilling of a well to any reasonable depth he may wish, appears to Wendell M. Jones, Petroleum Equipment Co., Los Angeles, as soon to be realized.

Addressing the A.P.I. Division of Development and Production Engineering, Dec. 6, he attributed to the proper construction, selection and application of equipment much of the credit for the recent discovery of numerous new oil fields.

"The use of poor or improper equipment," he said, "has prevented many operators from being rewarded by the successful completion of their wildcat tests.

"Prolific oil structures have been condemned and abandoned only to be discovered later when drilled properly and to the correct horizon. Perseverance, use of good equipment and faith in the geological data at hand has recently resulted in the discovery of what may prove to be California's greatest field; and this in an area that has been wildcatted unsuccessfully for many years."

The speaker had reference to the Kettleman Hills discovery of the Milham Corp., near the older Coalinga field.

Mr. Jones discussed factors affecting choice of equipment and described portable rotary rigs for shallow drilling; newer types of heavy duty rotary equipment; and the automatically controlled electric drilling and hydraulic feed outfits especially adapted to exploration work.

"The high first cost of the newer and heavier drilling machinery and miscellaneous equipment," he said, "is usually justified, both because of the added assurance of completing the hole to the planned depth and the increased speed of drilling made possible."

He declared that while the rotary system has virtually replaced the cable tool method of drilling in certain districts it is conceded that the last mentioned still may have advantages in others. Where holes can be drilled open and dry, or where considerable lime or flinty formations must be penetrated, economies in drilling by the cable tool method may be effected.

The recent development of percussion core bits for use with cable tools he described as in part overcoming the objectionable features of bailer samples. The rotary core bit was described, however, as giving the geologist a much truer cross-section of underground conditions in most instances than cuttings.

Conservation for Santa Fe Springs Awaits Operators' Vote

LOS ANGELES, Dec. 8

CONSERVATION plans for Santa Fe Springs and Long Beach are now under actual consideration of interested operators and executives of the various companies, with the request that the agreements be signed and returned to the committee not later than Dec. 18.

The agreements in full were mailed to those interested Dec. 7 and the Committee of Fifteen feel that fully 80 per cent of the Santa Fe Springs operators will sign up, and it is possible that another five per cent can be "sold" on coming in. No one is making any guesses with reference to what action will be taken by the Long Beach operators.

The plans under consideration call for repressuring the upper producing oil sands at Santa Fe Springs with the surplus gas that will come from the deeper zones, and also call for pinching back the deep sand wells to reduce the amount of natural gas going to waste.

The Long Beach plan calls for pinching the wells producing large amounts of gas to reduce gas wastage. Committees have been working on both conservation plans for several weeks.

Many engineers and operators are fast reaching the conclusion that Santa Fe Springs can hardly be expected to reach the high peak of 300,000 barrels predicted by a committee of engineers, as it has been found that the deep Buckbee zone is only about 150 feet in thickness and also may not cover as large an area as was at first expected.

There is an intermediate oil sand, just above the Buckbee, which is now called the Nordstrum sand, which is slightly more than 100 feet in thickness, but which is a very prolific sand.

The Getty well that burned so long is producing from this sand and the Bellview, the second well to catch fire, also stopped in this zone.

Three wells are showing water, supposedly from the bottom of the Buckbee, or around the shoe. Wells are also showing a decline in production until now the deep zone producers are averaging only slightly more than 3400 barrels against 4000 barrels four weeks ago. On Dec. 5, there were 15 wells producing from the Buckbee and two from the Nordstrum.

On the same date, a total of 235 wells were drilling in the field, 15 of this number standing cemented just above the Buckbee, 5 drilling in the lower oil zone, 4 wells cemented just above the Nordstrum and 12 drilling into this sand.

Engineers feel there is still another producing zone below the water just under the Buckbee. Some hole will be drilled sufficiently deep to tell the story. One operator this week said he doubted if the production peak from the two present zones would reach 200,000 barrels, but it is expected this peak will be reached within five or six weeks. This operator feels that the production decline will be fast, when it starts, and after the gas head is off.

Attention is being turned back to Long Beach, where it is possible for the daily production to be greater six months from now than Santa Fe Springs. Total of 175 wells are now drilling in this field, a sufficient number to furnish a new producer a day for several months.

During three weeks ended Dec. 1, a total of 19 new locations were announced for Long Beach and only 15 in the same period at Santa Fe Springs. It is expected that Long Beach production will hover around 190,000 barrels a day for some months, as the wells are producing from very thick zones, and the gas pressure is holding up well.

Seal Beach, where there has been little activity for months, is reviving to some extent, especially in the older part of the field, held entirely by Standard Oil, Associated Oil and Marland Oil. Five wells are drilling in addition to seven deepening jobs. At Kern Front, there is a new movement on to bring about another shut in program. Practically all the production in this area was shut in for many months, but two months ago a number of wells were opened, each operator forcing another to act. Standard Oil reduced the posted price for this oil to 50 cents a barrel, as the pipe line companies did not want to buy this heavy oil at any price. Kern Front is now credited with a daily production of 11,000 barrels with 9800 barrels shut in. The present movement will likely increase the shut in total by about 5000 barrels.

Chanslor-Canfield-Midway Oil Co. is preparing to start drilling its No. 5 well, just west of No. 4, in section 7 in the Midway field and Republic Production is to start its No. 33, one location west of No. 31. Republic abandoned its No. 32 as a dry hole.

This activity is in the part of the field where deeper oil sands were discovered some months ago. These two companies will probably keep only one string of tools each busy.

Restricted Drilling Planned For Kettleman Hills

LOS ANGELES, Dec. 8

THAT the Kettleman Hills area in Kings County, will be developed in a uniform manner, by drilling one well on each 20 acres and by locating each offset well 330 feet from the property line, is the tentative decision reached by those holding property there.

All details of such an agreement have not yet been worked out, but there is no doubt the new field will be developed in a manner calculated to reduce the number of wells to be drilled. Later, it is expected that some agreement will be reached with reference to producing of the new wells.

Kettleman Hills was proved for production some weeks ago when the Milham Exploration Co.'s Elliot 1 blew in for about 4000 barrels of 59.6 gravity oil and about 45,000,000 cubic feet of wet gas, with bottom of hole at 7108 feet. Efforts have been made by a number of operators for the past 20 years to find oil in these hills, and it now develops that none of the old holes were drilled to a sufficient depth.

The General Petroleum Corp. plans to have a pipe line into the new field by Dec. 15. In the meantime the production from the discovery well is being hauled in tank trucks by the Standard of California. Five gas traps have been placed at the well and they are taxed to care for the flow of oil and gas. The Texas Co. is building a natural gasoline plant on the Milham lease to treat the gas, and the plant will be so built that additions can be built if greater capacity is needed.

Standard Oil is preparing to drill two wells as offsets to the Milham producer and this week made a third location in Sec. 10-22-17, the well to be started within 90 days. Petroleum Securities recently acquired several leases in the Kettleman Hills area and plans to start three wells in the near future.

Milham Exploration will start Elliot 2 in Sec. 2-22-17 within a few weeks and E. J. Miley is to start a well shortly. Ohio Oil Co. has taken over the South Dome Oil Co.'s tract in Sec. 35-24-19 where a well has been drilled to 3125 feet and will carry the well on down. E. L. Doheny and son, doing business as Doheny & Doheny, leased the 160-acre A. Robinson tract, paying $200,000 and are to start a well.

Back Pressure On Face of Sand Increases Ultimate Yields

Staff Special
CHICAGO, Dec. 6

BETTER understanding of the factors affecting the life of flowing wells in the Mid-Continent will influence operators to produce their flush oil more economically, in the opinion of J. R. McWilliams, production engineer of the Skelly Oil Co., Tulsa.

These operators, he told the A. P. I. Division of Development and Production Engineering, Dec. 5, will be able to increase the ultimate yields of the wells by studying the effects of back pressure applied against the face of the oil producing sand.

Mr. McWilliams attempted to point out in his paper the opportunities to Mid-Continent operators in producing many wells economically by taking advantage of the expansion of compressed gas, which nature has stored with the oil, and using part of this expansive energy in flowing.

In the Mid-Continent, he pointed out, the volume of the gas under reservoir pressure is several times the volume of the oil with which it is associated. The winding minute channels in the sand afford a limited passageway for the movement of oil and gas mixtures and there is nothing to be gained by increasing, through expansion, the volume of the gas as it proceeds through the winding channels unless more energy is needed for moving the mixture. If more energy is needed it can be secured by reducing the back pressure against the face of the sand.

Oil is a liquid and cannot travel as rapidly through the minute, winding channels in oil sands as can gas, and for that reason the velocity of the expanding gas must be controlled to suit the maximum velocity for the oil and this control is secured by applying back pressure at the bottom of the well.

The amount of back pressure that should be imposed against the face of the producing sand during the flush stage of production is problematical but regardless of what this maximum back pressure should be, the operator can at least feel justified for a certain length of time in holding the amount of pressure at the bottom of the well that is necessary to flow the production to the surface.

If the well is properly swabbed or agitated, the oil production will compare favorably with the amount that can be produced if the well is properly equipped to flow, but in the former case the gas does most of its expansion through the winding channels in the sand where its full expansion is unnecessary unless the reservoir pressure is relatively low. Therefore, the cost of swabbing or agitating can be eliminated if a certain amount of pressure is maintained at the bottom of the well so that part of the expansion of the gas can occur in the flow pipe.

The rate of expansion of the compressed gas per lineal foot of flow pipe was described as important; and this rate of expansion can be controlled by running the proper size of flow pipe or by applying back pressure at the top of the well.

Mr. McWilliams expressed his belief that discussions and data offered in his paper justify the statement that there is a maximum rate of gas flow through a given size of flow pipe against atmospheric pressure if all the oil entering the well is flowed to the surface and if a relative low pressure is maintained to flow the well. Therefore, if the rate of expansion of the gas is to be controlled by restricting the flow to a certain size of pipe, a measurement should be made of the volume of gas which the well produces and a suitable size of flow string selected to fit the above conditions.

The volumes of gas as given in the accompanying table were suggested as the approximate maximum volumes of gas which should be expanded through the given sizes of pipe against atmospheric pressure to lift all the oil that can enter the well with a relatively low back pressure on the sand. It is assumed that the gas-oil ratio will be more than 1000 cubic feet of gas per barrel of oil.

If back pressure is applied at the top of the well to control the expansion of the gas up the flow string there will be a higher back pressure against the face of the producing sand than would be the case if the expansion were controlled by running the proper size of flow pipe. If back pressure is applied at the top of a given size of flow pipe for the purpose of increasing the back pressure on the sand, then the problem is to ascertain by trial how much back pressure can be applied before the minimum rate of expansion occurs in the flow pipe and the rate of oil production decreases.

As the reservoir pressure gradually decreases, with the age of the well and field, more of the expanding gas is required to force the oil into the well and consequently less pressure is available to expand the gas up the flow pipe. If the well is to continue to flow its production, he said, all unnecessary back pressure at the top must be eliminated.

Approximate Maximum Gas Volumes For Expansion In Given Sizes of Pipe

Diameter Pipe (Inches)	Weight Pipe (Pounds Per. Ft.)	Volume of Gas (Thousands of Cu. Ft., at 15 Pounds Per Sq. In., Absolute)
2	4.6	330
2½	6.4	564
3	8.5	992
4	12.6	2,040
5 3/16	20	3,367
6⅝	24	5,957
8¼	32	12,917

Large-Diameter Wells Yield Most Oil

CHICAGO, Dec. 6.—The greater production efficiency of large-diameter oil wells was stressed in a paper of Lester C. Uren, F. F. Davis and W. L. Jarvis before the A.P.I. division of Development and Production Engineering, Dec. 6. Results of experimental work prove conclusively, they said, that as the diameter of the well increases oil enters with less resistance and, consequently, with less expenditure of gas energy.

It had also been found, they said, that under competitive conditions the producer who drills wells of larger diameter than his neighbors enjoys an important advantage. Continuing, they said:

"One large-diameter well may offset two wells of normal diameter. Priority in completion of wells can be minimized and lost production regained providing the time handicap is not too great. Interference effects over wide areas may be developed.

"The superior production efficiency of the large-diameter well persists throughout its entire productive life. Although best results are secured by completing the wells originally with large diameters, even after properties have reached full development and have attained the settled production stage important increases in the ultimate recovery and rate of production may be realized by reaming cavities about the wells within the oil sand.

"Where competitive conditions do not exist, it is believed that the large-diameter well offers important economic advantages in that it permits wider spacing of wells, more rapid recovery and greater ultimate recovery. This means lower development and production costs, quicker realization on invested capital and greater ultimate profit.

"It would seem that the development of a practical method of reaming wells to large diameters where they penetrate the oil sand, and of preserving the cavities so formed, would offer a new and profitable field of investigation.

"The oil producer would be, thereby, given control of an important factor in oil drainage which he has hitherto disregarded; a factor which, when brought under control, offers the basis for an entirely new technic of far-reaching influence in the economics of oil production."

New Type Relief Valve Tested By Association Committee

TULSA, Dec. 8

IMPORTANT fire tests of a new type relief valve for shipping containers for liquefied petroleum gas were conducted in the Burbank field during the recent visit to the Mid-Continent of the Flammable Liquids Committee of the National Fire Protection Association. The tests were conducted through the cooperation of the Bureau of Explosives and the Philfuels Co., a subsidiary of the Phillips Petroleum Co.

The new valve is a spring loaded relief valve as designed by Victor Willoughby, chief engineer of the American Car & Foundry Co. The valve met specifications regarding port area and lift calculated by F. J. Fetterly of the Bureau of Explosives, after many months' study in development of a formula.

The purpose of the relief valve test was to demonstrate the practicability of the American Car & Foundry valve when subjected to a fire test even more severe than might be met in commercial usage.

The standard 1000-pound multi-unit liquefied petroleum gas cylinder 30 inches in diameter by 112 inches long was loaded with liquefied petroleum gas in accordance with the Interstate Commerce Commission regulations. This cylinder, being an I. C. C. 27, was designed for 500-pound test pressure and according to regulations, the relief valve was set at three-fourths the test pressure or 375 pounds. It was then subjected to an intense fire and the temperatures and pressures thus created were obtained by means of automatic recording devices.

The charts showed the very satisfactory results obtained. The valve popped off at 375 pounds pressure and because of the continued intensity of the fire, the complete contents were dissipated before the valve closed. In similar tests where the fire was of less intensity, the valve reset when the pressure dropped due to lower temperature. In actual practice, this is an important consideration, since only sufficient of the liquefied petroleum gas would be vented to relieve the cylinder of excess pressure. The fire hazard is thus minimized and there is also a substantial saving in fuel to the shipper.

Heretofore frangible discs or fusible plugs have been used as protective features. When either of these devices is once "blown" the entire contents of the cylinder is lost and in case of fire, the hazard is relatively increased. It appears, therefore, that the advent of the spring loaded cylinder relief valve is of great importance to the liquefied petroleum gas industry.

Fire test of container filled with liquefied petroleum gas and equipped with spring loaded relief valve. Test was conducted by the Bureau of Explosives and the Philfuels Co. in the presence of the Flammable Liquids Committee of the National Fire Protection Association.

Below is a view of the fire test of spring loaded relief valve or liquefied petroleum gas conducted by Philfuels Co., subsidiary of the Phillips Petroleum Co., at Burbank, in conjunction with the Bureau of Explosives

Conservation in Drilling Naval Reserves Sought

(By Telegraph)

WASHINGTON, Dec. 10.—Four bids were submitted to the Interior Department today for the royalty oil produced from government lands in the Salt Creek field in the three years beginning Jan. 1. Two were by parties known at the department.

The Midwest Refining offered the best field price, flat, without bonus. The Texas Co. and White Eagle Oil & Refining Co., jointly offered 21.75 cents per barrel above the best field price. W. L. Walls, Cheyenne, Wyo., offered 42 cents above the best posted field price. B. W. Frost, on a piece of scrap paper, under a date line consisting of the word Kansas, offered 50 cents per barrel "or $2,100,000 for all the oil produced in the three years in question."

The bids have been turned over to Dr. George Otis Smith of the U. S. Geological Survey for analysis and recommendation.

Senator Hale of Maine has introduced in congress a bill looking to the conservation of oil in the naval reserves by authorizing the secretary of the navy to make arrangements for compensation with owner or lessees of adjoining lands in lieu of drilling offset wells. He would also allow the navy to trade with owners of lands within the naval reserves so as to induce them to give up such lands in exchange for lands in Naval Reserve No. 1 so as to consolidate the naval oil lands and assure the conservation of oil in the ground where possible, or obtain compensation for drainage where such conservation is not possible.

The bill amends the national leasing act and the act of June 4, 1920, the latter being the one under which Fall made the contracts for drilling the reserves in Wyoming and California.

Seminole Production by Companies and Leases, December 5 and November 28, 1928

LITTLE RIVER

Company	Farm	S.T.R.	Dec. 5th Wells	Dec. 5th Prod.	Nov. 28th Wells	Nov. 28th Prod.
Amerada	Nitey	2- 7-6	3	620	3	840
Amer.-Wilcox		35- 8-6	2	255	2	255
Total Amerada.			5	875	5	1,095
Barnsdall	Cotcha	23- 7-6	2	940	2	920
Barnsdall	Hotulka	22- 7-6	2	204	2	184
Barnsdall	Walker	4- 7-6	1	500	1	440
Total Barnsdall.			5	1,644	5	1,544
Blackwell	Baker	11- 7-6	4	935	4	985
Blackwell	Nitey	35- 8-6	6	1,299	6	1,299
Blackwell	Talley	14- 7-6	4	985	4	900
Total Blackwell.			14	3,219	14	3,184
Bryan-Emery	Walker	4- 7-6	1	14	1	13
Carter	Cotcha-M	23- 7-6	3	130	3	95
Carter	Cudjo	36- 8-6	1	240	1	250
Carter	Fish	36- 8-6	4	415	4	425
Carter	Harjo C	11- 7-6	3	5,167	3	5,352
Carter	Harjo M	13- 7-6	2	750	2	805
Carter	Jackson	11- 7-6	4	1,327	4	1,417
Carter	Larney	24- 7-6	3	1,396	3	1,540
Carter	Lena	10- 7-6	1	682	1	730
Carter	Moore	11- 7-6	2	437	2	480
Carter	Tewee	14- 7-6	6	3,220	6	3,656
Carter	Thomas	11- 7-6	1	305	1	320
Carter	Wilson	12- 7-6	2	445	2	505
Total Carter....			30	14,504	30	15,454
Champlin	Tewee	14- 7-6	2	1,697	2	1,750
Continental	Cosar	35- 8-6	7	1,565	7	1,540
Continental	Cosar M	25- 8-6	1	405	1	437
Cont. et al.	Milsey	11- 7-6	2	325	2	1,550
Total Continental			10	2,295	10	3,527
Empire	Charty	24- 7-6	1	218	1	280
Empire	Coker	13- 7-6	1	987	1	1,035
Empire	Sandlin	3- 7-6	1	0	1	15
Total Empire...			3	1,207	3	1,330
Gypsy	Brown C	33- 8-6	2	572	2	275
Gypsy	Brown M	33- 8-6	1	1,250	1	645
Gypsy	Campbell	33- 7-6	2	2	2	32
Gypsy	Conard	22- 7-6	2	675	2	670
Gypsy	Cosar	25- 8-6	1	0	1	0
Gypsy	Cosar W	35- 8-6	2	195	2	228
Gypsy	Cotcha	23- 7-6	6	1,807	5	1,650
Gypsy	Denmark	11- 7-6	4	2,287	4	2,617
Gypsy	Hulhoke	14- 7-6	10	3,297	10	3,600
Gypsy	Mungee	1- 7-6	1	15	1	17
Gypsy	Payne	5- 7-7	1	45	0	0
Gypsy	Pottie	35- 8-6	4	697	4	965
Gypsy	Renton	11- 7-6	3	320	3	627
Total Gypsy....			37	11,662	36	11,316
Independent	Davis	13- 7-6	2	1,595	3	1,585
Independent	Tewee	14- 7-6	6	2,747	6	2,938
Independent	Williams	15- 7-6	1	510	1	580
Indep. et al.	Harris	23- 7-6	8	2,002	8	2,171
Indep.-W. Eagle	Davis	3- 7-6	4	525	4	660
Total Independent			22	7,379	22	7,934
I. T. I. O.	Campbell	1- 7-6	1	139	1	159
I. T. I. O.	Dungan	35- 8-6	3	813	3	1,114
I. T. I. O.	House MA	1- 7-6	1	46	1	56
I. T. I. O.	House WE	1- 7-6	1	26	1	22
I. T. I. O.	House B	2- 7-6	4	489	4	576
I. T. I. O.	Hull	26- 8-6	3	484	3	521
I. T. I. O.	Jackson	1- 7-6	3	618	3	706
I. T. I. O.	McCulla	1- 7-6	3	302	3	409
I. T. I. O.	Nitey	1- 7-6	6	247	6	97
I. T. I. O.	Phoebe-A	36- 8-6	2	162	2	151
I. T. I. O.	Phoebe B	36- 8-6	3	140	3	135
I. T. I. O.	Reed	1- 7-6	1	16	1	21
I. T. I. O.	Soketheche	1- 7-6	3	645	3	517
Total I. T. I. O.			34	4,127	34	44,484
Magnolia	Cruse	2- 7-6	4	483	4	417
Magnolia	Denby	11- 7-6	3	1,496	3	1,502
Magnolia	Dixon	31- 8-7	1	2	1	1
Magnolia	Harjo A	14- 7-6	2	165	2	240
Magnolia	Harjo B	14- 7-6	2	600	2	728
Magnolia	Pottie	35- 8-6	4	491	4	516
Magnolia	Reed E	31- 8-7	1	30	1	35
Magnolia	Reed I	22- 7-6	3	776	3	800
Total Magnolia.			20	4,047	20	4,239
McCulloch-Sands	Harrison	4- 7-6	1	32	1	52
Mid-Continent	Brunner	11- 7-6	4	1,000	4	1,225
Mid-Continent	Eleck	23- 7-6	1	215	1	40
Mid-Continent	Smith	5- 7-7	2	3,730	2	3,935
Mid-Continent	Wadsworth	36- 8-6	7	200	7	340
Total Mid-Continent			14	5,145	14	5,540
W. B. Pine	Hoyecha	26- -6	6	2,315	6	2,405
Pine-Phillips	Pottie	35- -6	2	307	2	310
Total Pine.....			8	2,622	8	2,710
Prairie	Chilcoat	25- 8-6	3	800	3	810
Prairie	Dungan	35- 8-6	1	30	1	35
Prairie	Gibson	14- 7-6	5	1,865	5	1,885
Prairie	Harris	14- 7-6	4	1,400	4	1,490
Prairie	House	2- 7-6	4	275	4	285
Prairie	Luste	5- 7-7	1	0	1	155
Prairie	Moppin	24- 7-6	1	365	1	390
Prairie	Talley	14- 7-6	4	1,390	4	1,500
Prairie & Amerada	Sunny	14- 7-6	8	4,200	8	4,805
Total Prairie...			31	10,325	31	11,355
Pure	Brinson	24- 7-6	1	1,398	1	1,334
Pure	Cotcha	14- 7-6	9	3,268	9	3,686
Pure	Harjo	11- 7-6	4	746	4	871
Pure	Hollins	11- 7-6	1	505	1	465
Total Pure.....			15	5,412	15	6,556
Reiter-Foster	Bunyard	14- 7-6	4	2,330	4	2,510
Roxana	Hotulke	23- 7-6	4	995	4	992
Roxana	Johnson	13- 7-6	4	2,976	4	3,184
Total Roxana...			8	3,971	8	4,176
Shaffer	Narcome	36- 8-6	2	305	2	200
Sinclair	Cosar	30- 8-6	3	675	3	635
Sinclair	Haney	12- 7-6	1	97	1	37
Sinclair	Tewee	14- 7-6	2	1,595	2	1,640
Sinc. & Kingwood	Pompey	24- 7-6	1	80	1	140
Total Sinclair...			7	2,447	7	2,452
Skelly	Carl	14- 7-6	2	1,366	2	1,486
Slick	Reed	13- 7-6	1	1,160	1	1,170
Slick	Williams	15- 7-6	2	425	2	485
Slick	Wood	26- 8-6	1	360	1	420
Slick & Pine	Coker	1- 7-6	1	895	0	0
Total Slick.....			5	2,830	4	2,074
Snowden-McS	Tiger	13- 7-6	3	1,285	3	1,470
Superior	Potulka	31- 8-6	1	5	1	5
Superior	Soketheche	1- 7-6	1	5	1	5
Total Superior..			2	10	2	10
Texas	Brooks	25- 8-6	1	195	1	90
Texas	Coker	1- 7-6	3	330	3	450
Texas	Janey	11- 7-6	3	645	3	705
Texas & Indep.	Hotulke	23- 7-6	4	1,675	4	1,605
Total Texas....			11	2,845	11	2,850
Tidal	House	1- 7-6	3	450	2	440
Tidal	Johnson	1- 7-6	1	25	1	30
Total Tidal....			4	475	3	470
Twin State	Lowe	25- 8-6	1	130	1	130
Wigdon-Long	Jefferson	31- 7-7	1	35	1	35
TOTAL LITTLE RIVER			305	94,234	304	99,782

MAUD

Amerada	Gossland	8- 8-5	1	647	1	660
Amerada	Hallum	1- 8-4	1	3,205	1	3,665
Barnsdall	Fife	14- 8-5	1	1,405	1	1,365
Gypsy	Bourassa	7- 8-5	1	0	1	0
Independent	Harding	18- 8-5	1	1,345	0	0
I. T. I. O.	Simpson	10- 8-5	1	0	1	54
I. T. I. O.	State	16- 8-5	1	0	1	0
Prairie	Campbell	18- 8-5	1	110	1	142
Pure	Lindley	18- 8-5	1	2,250	1	0
Sinclair	Bellars	19- 8-5	1	355	0	0
TOTAL MAUD			10	9,317	8	5,886

MISSION

Carter	Fuswa	18- 8-6	1	0	1	0
Carter	Micco	8- 8-6	1	0	1	0
Gypsy	Baby	6- 8-6	1	15	1	15
Gypsy	Barkus	6- 8-6	1	0	1	0
Gypsy	Dosar	7- 8-5	1	847	1	1,007
Gypsy	Mission	5- 8-6	1	7	1	0
Gypsy	Mosar	1- 8-5	1	0	1	0
Marland	Maines	7- 8-6	1	85	1	92
Mid-Kansas	Moore	7- 8-6	1	95	1	85
Roxana	Maines	7- 8-6	1	0	1	0
Rox-Marland	Hernsdon	7- 8-6	1	0	1	0
Slick	Tiger	13- 8-5	1	0	1	0
Twin State	Hayes	8- 8-6	1	50	1	50
TOTAL MISSION			12	1,099	12	1,249

SUMMARY

	Dec. 5th Wells	Dec. 5th Prod.	Nov. 28th Wells	Nov. 28th Prod.
TOTAL MISSION	**12**	**1,099**	**12**	**1,249**
TOTAL LITTLE RIVER	**305**	**94,234**	**304**	**99,782**
TOTAL MAUD	**10**	**9,317**	**8**	**5,886**
TOTAL BOWLEGS	**312**	**46,755**	**312**	**47,958**
TOTAL EARLSBORO	**288**	**75,018**	**288**	**75,300**
TOTAL SEMINOLE	**284**	**41,576**	**286**	**40,965**
TOTAL SEARIGHT	**67**	**10,161**	**67**	**10,133**
GRAND TOTAL	**1,278**	**278,160**	**1,277**	**281,273**
Average per well			**217**	**220**

Completions in Oklahoma and Kansas, Week Ended December 8, 1928

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Init. Prod.
Magnolia	1	SE NE SE 23-1-3 W	2330-2632	95
Hall-Briscoe	4	SE NE SW 29-1-3 W	2873-2990	50
Magnolia	2	NW NE NE 30-1-3 W	2958-3072	50
Magnolia	1	SE SW NW 33-1-3 W	2458-3986	48
Magnolia	4	NE NW SW 33-1-3 W	3437-3991	85
Smith et al	1	SW NW SE 26-1-3 W	T.D. 3200	Dry

Coal County

McGraw et al	1	SW SE NE 35-1-8 E	1850-1940	10

Cotton County

Moore et al	2	CNL NW SW 2-2-10 W	T.D. 2703	Dry

Creek County

Billingslea	1	NWc NE 19-17-9 E	T.D. 3475	Dry
Wheeler et al	1	NWc 32-17-11 E	T.D. 2802	Dry
Spears	8	SWc NE NW 11-17-12 E	T.D. 1808	Dry
Atlantic	2	SWc NE NW 23-14-10 E	2650-2665	30
Madden-Madden et al.	3	SWc SE 13-15-9 E	3401-3403	750

Garvin County

Magnolia	7	NWc SW NW 16-1-3 W	1719-1728	3M
Markham et al	3	SWc NE NW NE 20-1-3 W	1628-2090	20

Grady County

Magnolia	8	NW SE NE 35-5-8 W	2160-2170	34M
Okla. Utilities	2	CSL N½ NW SE 2-4-8 W	2135-2345	13M
Magnolia	1	SEc NE SE NE 28-3-5 W	1889-1918	28

Hughes County

Gypsy	1	SWc NE 5-8-9 E	3496-3516	14M
Sutton et al	1	C NE SE 27-9-10 E	2794-2810	10M

Kay County

Carter-Ona	1	C NE NE 19-29-1 E	3335-3355	625
Wilson	1	C SW NE 14-37-1 E	674-680	2M

Kiowa County

Burke	1	SWc NW 4-6-16 W	T.D. 936	Dry

Marshall County

Armstrong	1	NWc NE SW NW 30-5-5 E	T.D. 628	Dry

Muskogee County

Grubbs-Young	4	NWc SW NW 8-15-15 E	T.D. 1688	Dry
Cushing	1	SEc SW SW 23-15-17 E	T.D. 2445	Dry
Parks	1	NEc SW NE 25-14-18 E	T.D. 2240	Dry
Bryan-Emery	5	CWL SE NE 8-15-15 E	1628-1629	10

Okfuskee County

Champlin	12	NWc SE SE 16-11-11 E	3453-3480	150
Atlantic	4	CNL S½ NE SE 11-10-11 E	2016-2028	75
Dixie	1	NEc SW 8-13-10 E	T.D. 3407	Dry

Okmulgee County

Tidal	10	SWc SE 24-15-14 E	1559-1580	7
Paraffine-Reliance	4	SEc NE SW 23-16-11 E	1705-1728	2
Dixie	1	SEc NW 17-13-11 E	2479-2499	23M
Sheldon et al	4	CSL SW SE 15-13-12 E	2664-2897	25

Osage County

McCune et al	11	NWc NE SE NW 15-24-6 E	454-476	5
Corbin-Hayer	7	NW SE SW 16-23-11 E	1658-1684	25
Pioneer	7	NEc NW NE SW 5-20-11 E	1712-1719	20

Pawnee County

Magnolia	3	SWc NW NE 15-20-6 E	3080-3126	20

Pontotoc County

Company	Well No.	Location	Depth	Init. Prod.
Louisiana	16	SW NW NE 19-5-8 E	2540-2632	1100
Cal Cul Oil Co.	1	SW NW SW 24-5-7 E	2650-2659 OWD	80M
Magnolia	1	NW NE SW 13-5-7 E	2819-2855	13.5M
American	1	NEc 18-5-5 E	2490-2556	40
Westheimer-Daube	4	SW SE SE 8-5-8 E	T.D. 4283	Dry

Pottawatomie County

Slick	2	SE NE NW 30-7-5 E	4476-4510	670
Gypsy	8	SEc NE 30-7-5 E	4335-4346	210
Magnolia	1	NE NW NE 20-7-5 E	4073-4351	435
Pure	1	SEc NE NE 26-7-4 E	4251-4275	4310
Texas	2	SE NW NW 25-7-4 E	4295-4323	1125
Gypsy	4	SE NE SE 25-7-4 E	4185-4196	120
Gypsy	3	SW NE SE 25-7-4 E	4185-4245	125
Gypsy	4	NW NE NW 25-7-4 E	4445-4457	90
Sinclair	12	SE SW SW 24-7-4 E	4268-4294 OWD	2115
Panther	2	NWc 23-7-4 E	4905-4072	180
Magnolia	3	SW SE SW 14-7-4 E	3720-3864	139

Seminole County

Carter	5	SE NW NE 14-7-6 E	4440-4445	633
Blackwell	4	SE SW SW 14-7-5 E	4206-4222	600
Shell	4	SE SW NW 13-7-6 E	4494-4502	1245
Pure	1	SE NW NW 11-7-6 E	5095-5103	715
Magnolia	4	SW SE NW 11-7-6 E	4150-4160	650
Gypsy	1	SWc NE 6-8-6 E	4258-4268	20
Slick-Skelly	2	NE SE NW 6-9-6 E	4431-4438	1555
Carter	5	NEc NW SW SE 34-1-8 W	T.D. 2148	Dry
Pace et al	1	NEc NW 3-2-3 W	T.D. 1686	Dry

Stephens County

Magnolia	18	SWc SE SE SW 34-1-8 W	1638-1648	140
Hedrick et al	1	NWc SW SW SW 35-1-5 W	1920-1924	110
Humble	1	SE NE NE 11-1-4 W	3103-3622	45
Clark-Cowden	2	SE NW SW 13-1-4 W	2926-3042	225
Twin State	1	SEc 14-1-4 W	2680-3700	120

Wagoner County

Elk Drlg	6	NWc SE NW 32-18-17 E	801-812	8M
Peterson-Young	3	NE SW SW 23-16-16 E	T.D. 1090	Dry

KANSAS

Butler County

Empire	3	NE SE SW 27-27-5 E	2734-2750	175
Empire	3	SE SW NE 22-27-5 E	2717-2746	150
Dixie	2	SWc SE 21-25-4 E	2610-2628	25

Clay County

Roth-Faurot	1	SEc NW 21-9-4 E	1770-1772	20

Cowley County

Independent	1	SE NE NE 21-31-4 E	T.D. 2530	Dry

Elk County

Shawver	1	SW NW NW 3-31-8 E	T.D. 2855	Dry

Ellis County

Streeter-Stearns	1	NWc SE 2-11-17 W	T.D. 3522	Dry

Greenwood County

Murphy et al	6	NEc SW NW SE 6-25-9 E	2094-2130	40

McPherson County

McPherson	2	C SW NE 31-18-2 W	2946-2980	20.5M

Osborne County

Johnson et al	1	C NW NE 15-8-15 W	T.D. 2607	Dry

New Field Operations in Oklahoma, Kansas, Panhandle, North, North Central and West Texas, Week Ended December 8, 1928

OKLAHOMA

Caddo County

Company	Well No. Farm	Location
Magnolia	3-Mose	NEc NW SW 5-5-9 W OWD

Carter County

Magnolia	1-Archer	SE SW NW 14-1-3 W

Comanche County

Magnolia	5-Price	NEc SE SW NE 30-2-9 W OWD

Cotton County

Shasta	1-Indian	NEc 34-1-11 W
Razor-Akins	1-Chambers	NW SE SW 31-1-10 W

Creek County

Spears	9-Glenn	NWc NE NE NW 11-17-12 E
Franchot et al	1-Ralston	SWc SE NW 16-16-10 E
Kessler-Logan	2-Morton	SEc NE NW 27-14-10 E
Twin State	7-Coachman	SE NW NE 20-17-7 E

Grady County

Magnolia	9-Skirvin et al.	NWc SE 25-5-8 W
Texas	5-Glover	CNL SE NE SW 13-4-8 W

Hughes County

Twin State	1-Hario	NW NE SE 8-8-9 E

Kay County

Carter-Ona	9-Shimp	CEL W½ SW SW 17-29-1 E
Carter	1-Carter	C NW NW 20-29-1 E
Wilson	2-Meuret	C SE NE 14-27-1 E
Ingram-Wilson	1-Grube	SWc NE NE NW 23-27-1 E

Kiowa County

Conner-Son	1-Zacherias	SWc NW NW 25-7-16 W
Bridwell et al	1-Stone	SEc NE 12-6-17 W OWD
Burke et al	1-Fox	NEc NW SE 5-6-16 W

Logan County

Blackwell	2-Quinley	NE SE NW 28-18-4 W

McClain County

Company	Well No. Farm	Location
Mid-Continent	1	SEc 22-5-3 E

Muskogee County

Williams	1-Roberts	CEL SW SW 9-15-17 E
Decius-Garrett	1-Collins	NW SW NE 18-14-18 E
Loweree	3-Brown	CNL NW SE 5-13-16 E

Okfuskee County

Umburn	7-Simmer	CNL NE SE 11-10-11 E

Okmulgee County

Unger Bros.	7-Harrison	SEc SW 24-15-14 E
Jolly et al	1-Serrell	SEc SW 33-15-14 E OWD
Taylor-Geiger	1-Smith	SWc 36-14-14 E
Pine	1-Henry	SEc NE NE 30-12-13 E OWD
Kim	1-Perryman	NWc SW 25-12-12 E
Hyer et al	1-Howard	NEc SE SE 17-15-14 E

Osage County

Lewis Prod. et al.	1	SWc 14-26-6 E
Texas	5	SW NW SE 30-25-6 E
Oliphant et al	1	NWc NE 6-21-9 E
Peters-Edgewood et al.	2	SE NE SE 8-21-9 E
Peters et al	3	NEc SE SE SE 8-21-9 E
Moore Est	19	NWc SW NW SW 9-21-9 E
Moore Est	20	NWc SE SW SW 9-21-9 E

Payne County

Twin State	2-Goff	SW NE SW 7-18-5 E

Pittsburgh County

Kerr-Key	1-Tall	C NW NW 32-4-12 E

Pontotoc County

Wilcox	1-Bowlin	NE SW SW 13-4-7 E

(Continued on Page 47)

New Field Operations in Oklahoma, Kansas, Panhandle, North, North Central and West Texas, Week Ended December 8, 1928

(*Continued from Page 46*)

Company	Well No. Farm	Location	
Wilcox	1	SE NE NE 14-4-7 E	
American	2-Jones	SE NE NE 18-5-5 E	
Ramsey	4-Whitney	NE SE NW 19-5-8 E	
Ramsey	4-Webb	NW SW SW 20-5-6 E	OWD
Sinclair-Hull	1-Gardner	NWc SE 6-4-6 E	
Pottawatomie County			
Magnolia	4-Youts	SW NE SW 20-7-5 E	
Magnolia	3-Youts	NW SE SW 20-7-5 E	
Gypsy et al	1-Guinn	NE SE NW 9-7-5 E	
Gypsy	3-Miller	SE NE SE 18-8-5 E	
Magnolia	4-Billington	NW SE SW 8-8-5 E	
Magnolia	3-Billington	SW NE SW 8-8-5 E	
Twin State	2-Colin	NWc SW 7-8-5 E	
Texas	4-Calvin	NE NW SE 7-8-5 E	
Amerada-Marland	2-Calvin	SWc NW 7-8-5 E	
Sinclair	2-Lewis	SWc 6-8-5 E	
Tidal	3-Dunn	SEc NE 12-8-4 E	
Mid-Continent	2-Rogers	SW SE SW 5-9-5 E	
Seminole County			
Texas	6-Lucy	SE SW SE 18-5-8 E	
Sinclair	1-Joana	NEc NW 24-5-7 E	
Slick	1-Fleet	SEc 11-5-7 E	
McCullouch et al	1-Lincoln	SEc NW 16-10-6 E	
Carter et al	1-Strothers	SE SW NW 11-9-6 E	
Carter	3-Davis	SE SW NW 13-9-5 E	
Carter et al	1-Gillim	NWc SE 13-9-5 E	
Magnolia	2-Gillim	NEc SW 13-9-5 E	
Magnolia	3-Hyde	SW SE NW 13-9-5 E	
Magnolia	4-Hyde	SEc NW 13-9-5 E	
Gypsy	2-Fife	NW SW NW 14-8-5 E	
Carter	1-Factor	SEc NW 26-7-6 E	
Stephens County			
Carter et al	1-Simpson	NEc SE SE SE 34-1-8 W	
Carter	6-Simpson	NWc SW SW SE 34-1-8 W	
Pace et al	4-Bush	NWc NE NE NW 3-2-8 W	
Pace et al	10-Bristowe	SWc NW NE 18-2-7 W	
Magnolia	1-School	SWc SE 13-1-9 W	
Lone Eagle	7-Simpson	NEc SW NE SE 34-1-8 W	
Magnolia	19-Kagay	NEc SE SE SW 34-1-8 W	
Pelwin	1-Baker	SW NE NW 36-2-6 W	
Franklin	2-Bell	NE SW SW 13-1-4 W	
Tulsa County			
Munn Bros	2-Wray	CWL SW NW 35-19-13 E	
Wagoner County			
McCracken et al	5-Childers	SEc NE 21-18-17 E	
McCracken et al	6-Childers	NEc SE 21-18-17 E	
Horner et al	1-Kidd	CSL NW NW 22-18-17 E	
Woods County			
Sinclair	1	C SW Sw 33-27-16 W	

KANSAS

Company	Well No. Farm	Location	
Butler County			
Empire	15-Ruston	NE SW SW 19-26-5 E	
Henderson-Holden	2-Morgan	SWc SE 14-27-5 E	
Ellis County			
Hartman et al	1-Knoll	NEc NW 17-13-18 W	
Davis-Hazlett	1-Weiland	NEc 1-13-16 W	
Greenwood County			
Dorsey-O'Brien	1-O'Brien	NEc SW 12-27-9 E	
Nelson	1-Claycomb	SE SW NW 6-25-9 E	
Harvey County			
Cay	1-Croue	NW NE NW 29-23-1 W	
McPherson County			
Mid-Kansas	1-Yoder	C NW SW 8-20-4 W	
Phillips County			
Watsonian et al	1-Weinman	C SW SW 34-2-19 W	
Rush County			
Danciger	1-Pinonka	C NE 17-19-17 W	
Sedgwick County			
Shell	1-Lyglisse	SEc NE 15-26-2 E	
McCulloch	1-Thurley	NE SW NE 24-29-1 E	
Sumner County			
De Forrest	3-Frantz	C NW NE 35-30-2 W	

TEXAS

NORTH EAST CENTRAL TEXAS

Company	Well No. Farm	Location	Survey
Brown County			
Mook-Tex. & Wakefield	3-Newton	Blk-148	Travis
Midland	1-Hill	Sec-8	Lovelace
Meridian	1-Spence	Sec-22 Blk-3	BBB&C
Anthis et al	3-Newton	Blk-282	Jones
Bannis et al	10-Newton	Blk-151	Curlong
Young Bros.-Alexander	12-Teston	Blk-151	Curlong
Clark-Buffalo	1-Weeden	Blk-64	Van Winkle
Mitcham et al	1-Newton	Blk-623	Honeycutt
Mitcham et al	1-Mass	.....	Bitts
Kerr et al	2-Hale	Blk-607	Cummings
Kone Prod	21-Hickman	Blk-783	Benson
Kone Prod	20-Hickman	Blk-783	Benson
Humble	7-Kilgore	Sec-3	Delgando
Humble	27-Hickman	Blk-783	Benson
Lloyd	1-Bailey	Blk-137	Winn
Heyser-Garrett	5-Lewis	Blk-624	Kenney
Callahan County			
Turley	3-Hickman	Sec-2	Jones
Moutray	5-Hatchett	Sec-29	D&DA
Reiter-Foster	11-Hatchett	Sec-24	D&DA
Reiter-Foster	9-Hatchett	Sec-24	D&DA
Reiter-Foster	10-Hatchett	Sec-24	D&DA
Reiter-Foster	8-Hatchett	Sec-24	D&DA
Reiter-Foster	7-Hatchett	Sec-24	D&DA
Reiter-Foster	6-Hatchett	Sec-24	D&DA
Texas	12-Hatchett	Sec-29	D&DA
Texas	11-Hatchett	Sec-29	D&DA
Texas	10-Hatchett	Sec-29	D&DA
Coleman County			
Duncan et al	2-Golson	Blk-180	Dockrill
Drew-Preddy et al	1-Kingsberry	Blk-495	Cleveland
Byrd-Goldston et al.	4-Moody	Blk-665, Sec-12	Scott
Independent	2-Overall	Sec-17, Blk-700	Barkley
Eastland County			
Texas-Pacific	2-Fee	.....	Robertson
Texas-Pacific	3-Fee	.....	Robertson
Moore-Garrett	1-Dolberry	Sec-10, Blk-2	H&TC
McCulloch County			
Lanning-Roberts	2-Barton	Blk-1055	Bleike

NORTH TEXAS

Company	Well No. Farm	Location	Survey
Archer County			
Texas	21-Hill	Sec-2408	TE&L
Texas	22-Hill	Sec-2408	TE&L
Gilliland	10-Neimeyer	Sec-2415	TE&L
American	4-Cernosek	Sec-2408	TE&L
Continental	2-Parrish	Sec-2	SP
Burns	1-Wilson	Sec-70, Blk-1	ATNCL
Browning	1-Fee	Blk-77	CE&L
Tidal	1-Waggoner	Blk-4	Harris
Cooke County			
Pure	3-Emboy	.....	Moss
McAnderson	1-Jones	Abst-20	Arocha
Montague County			
Continental	4-Jones	.....	Donoho
Wichita County			
Hines-Panhandle	12-Waggoner	Abst-772	GC&SF
Cotton	2-Michie	.....	Neitherly
Continental-Hammond	1-Munger	Blk-31	KWVFL
Hines-Panhandle	14-Waggoner	Abst-772	GC&SF
Holbrook-Woods	26-Kemp et al.	Blk-82	KWVFL
Gulf Prod	7-Waggoner	.....	Willis
Wilbarger County			
Waggoner	3-Waggoner	Sec-24, Blk-4	H&TC
Fain-McGaha	25-Waggoner	Sec-24, Blk-4	H&TC
Fain-McGaha	24-Waggoner	Sec-24, Blk-4	H&TC
Fain-McGaha	23-Waggoner	Sec-24, Blk-4	H&TC
Robertson	1-Waggoner	.....	Calhoun
Waggoner	2-Waggoner	Sec-31, Blk-4	H&TC
Waggoner	1-Waggoner	Sec-31, Blk-4	H&TC
Easter	2-Waggoner	Sec-26, Blk-4	H&TC
Cosden	32-Waggoner	Sec-31, Blk-4	H&TC
Cosden	31-Waggoner	Sec-31, Blk-4	H&TC
Phillips	11-Waggoner	Sec-45, Blk-4	H&TC
Texas	2-Waggoner	.....	Fuller
Young County			
Burns	1-Stewart	.....	Dawson
Riggs et al	7-Sweet	Sec-1488	TE&L
Rhoades	1-Moreland	Sec-1485	TE&L
Williams-Willis	2-Casey	Sec-1486	TE&L
Dorian et al	2-Johnson	Blk-12	Sergeant
Weekly et al	2-Haygood	Sec-1466	TE&L
Woolen-Reed et al	1-Eichelberger	Sec-1472	TE&L
Wollen-Reed et al	1-Davis	Sec-1906	TE&L
Willis-Gatewood	1-Buster	Sec-1469	TE&L
Scott et al	1-Alexander	Abst-40	BS&F

PANHANDLE

Company	Well No. Farm	Location	Survey
Gray County			
Humphreys et al	1-Back	Sec-24, Blk-25	H&GN
Delmar	1-Chapman	Sec-10, Blk-26	H&GN
Hutchinson County			
Antelope Creek	3-Sanford	Sec-82, Blk-46	H&TC
Phillips	1-Connell	Sec-121, Blk-4	I&GN
Wheeler County			
Hartell et al	1-Burcham	Sec-91, Blk-17	I&GN
Fain-McGaha-Humble	1-Noel	Sec-54, Blk-24	H&GN

WEST TEXAS

Company	Well No. Farm	Location	Survey
Borden County			
Green	1-Slaughter	Sec-32, Blk-31	T&P
Crane County			
Gulf Prod	57-McElroy	Sec-201, Blk-F	CCSD
Fisher County			
Hucony	1-Mayberry	Sec-328	Bell
Dunningan et al	1-Henry	Sec-331	Hibbett
Glasscock County			
Merriweather	2-McDowell	Sec-35, Blk-34	T&P
Howard County			
Marland	11-Clay	Sec-139, Blk-29	W&NW
Cosden Inc	1-Roberts	Sec-128, Blk-29	W&NW
Taylor-Link	2-Abrams	Sec-3, Blk-32	T&P
Plymouth	1-Abrams	Sec-5, Blk-32	T&P
Amerada	4-Roberts	Sec-128, Blk-29	W&NW
Amerada	3-Roberts	Sec-137, Blk-29	W&NW
Amerada	2-Roberts	Sec-137, Blk-29	W&NW
Atlas Drlg	1-Hamlin	Blk-32	T&P
Amerada	6-Roberts	Sec-128, Blk-29	W&NW
Henshaw	2-Eason	Sec-6, Blk-32	T&P
Henshaw	1-Eason	Sec-6, Blk-32	T&P
Henshaw	2-Eason	Sec-6, Blk-32	T&P
Amerada	5-Roberts	Sec-128, Blk-29	W&NW
Pecos County			
McMann	3-Smith	Sec-25, Blk-194	TC
McMann	4-Smith	Sec-25, Blk-194	TC
Yates Ranch	1-Yates	Sec-70, Blk-1	I&GN

Completions in Texas, Week Ended December 8, 1928

NORTH AND EAST CENTRAL TEXAS

Anderson County

Company	Well Farm	Survey	Sec. and Blk.	Depth	Init. Prod.
Humble	1-Guaranty-State Bank	Albright		T.D. 4345	Dry

Brown County

Kerr et al	1-Hale	Cummings	Blk-607	T.D. 470	Dry
Ditto	2-Richardson	SA&MG		T.D. 1890	Dry
Daininger	1-Spivery	HT&B	Sec-22	T.D. 1050	Dry
Bearman-Garrett	1-Clark	.....	Sec-3 Blk-798	T.D. 1371	Dry
Young Bros. et al	6-Armstrong	Curlong	Blk-151	1211-1215	100
Anthis et al	2-Newton	Jones	Blk-282	158-160	3
Lloyd	11-Collier	Smith	Blk-139	428-431	5
Green-United Royalties	1-Barnes	Hawkenburg	Blk-105	1124-1130	3½M
Forrest	6-Moore	SA&MG	Blk-4	1250-1272	60

Callahan County

Texas	9-Hatchett	D&DA	Sec-29	343-356	60
Reiter-Foster	1-Hatchett	D&DA	Sec-24	364-369	5&5M
Bradstreet	1-Compere	Vigal		1726-1731	12
Shaheen et al	1-Tatum	SP	Sec-17 Blk-5	T.D. 805	Dry
Goodloe et al	1-Hatchett	D&DA	Sec-30	T.D. 475	Dry

Cherokee County

Humble	3-Weinberg Bros.	Trimble	Blk-13	T.D. 3434	Dry

Coleman County

Samuel et al	1-Pitts	Wallingford	Blk-674	T.D. 3505	Dry
Reynolds et al	1-Ranch	Blanchard		T.D. 1012	Dry
Meredith-Benton	1-Bunney	Tompkins	Blk-328	T.D. 1380	Dry
Continental et al	2-Smith	GH&H	Sec-13 Blk-1	1604-1614	20

Eastland County

Davis et al	1-Butler	H&TC	Sec-28 Blk-2	T.D. 1508	Dry

Erath County

Cowan et al	1-Graves	Smith		T.D. 3508	Dry

McCulloch County

Haggerty et al	1-Shelton	H&TC	Blk-155	T.D. 1010	Dry
McLean-Jamison	1-Wells	Huspers	Blk-1098	T.D. 1266	Dry
Lanning et al	1-Baxton	Bleike	Blk-1055	T.D. 1015	Dry

NORTH TEXAS

Archer County

Texas	21-Richardson	DAR	Blk-6	1346-1364	30
Gilliland	9-Neimeyer	TE&L	Sec-2115	1408-1419	75
American	3-Cermosek	TE&L	Sec-2409	1414-1433	60
Smith	2-Prideaux	TE&L	Sec-1860	T.D. 713	Dry
Shappell	1-Turberville	Carson	Blk-149	T.D. 1870	Dry
Moore	1-Ward	Classon		T.D. 1260	Dry
Hutchinson	5-Hutchinson	ATNCL	Sec-123 Blk-1	T.D. 1190	Dry
Consolidated	4-Neimeyer	TE&L	Sec-2415	T.D. 1442	Dry
Burns	1-Crombie	Blaunt	Abst-13	T.D. 1550	Dry

Wichita County

Magnolia	2-Kemp	KWVFL	Blk-28	T.D. 1936	Dry
Hines-Panhandle	10-Waggoner	GC&SF		T.D. 1915	Dry
Holbrook-Woods	25-Kemp	KWVFL	Blk-82	1196-1205	40
Hammon	1-McCarty	Eaves	Abst-447	1335-1370	55
Cotton	1-Michie	Netherly		789-800	4
Comac Drlg. et al	1-Bishop	Netherly		1775-1785	92

Wilbarger County

Company	Well Farm	Survey	Sec. and Blk.	Depth	Init. Prod.
Waggoner Ref	3-Waggoner	H&TC	Sec-33 Blk-4	2388-2404	800
Waggoner Ref	10-Waggoner	H&TC	Sec-30 Blk-4	2298-2310	100
Tower-McKanna	3-Waggoner	H&TC	Sec-32 Blk-4	2293-2314	180
Phillips	2-Waggoner	H&TC	Sec-5 Blk-5	1868-1904	130
Phillips	7-Waggoner	H&TC	Sec-47 Blk-2	1887-1988	15
Easter	1-Waggoner	H&TC	Sec-26 Blk-4	2347-2350	250
Phillips	2-Waggoner	H&TC	Sec-18 Blk-4	T.D. 2445	Dry
Fain-McGaha	2-Waggoner	H&TC	Sec-37 Blk-4	T.D. 1973	Dry

Young County

Wollen-Reed et al	1-Bryan	TE&L	Sec-1902	T.D. 840	Dry
Riggs et al	22-McKinley	TE&L	Sec-1489	T.D. 575	Dry
Goldsmith et al	1-Spencer	TE&L	Sec-1396	T.D. 879	Dry
Chancellor	1-Oliver	TE&L	Sec-1942	T.D. 600	Dry
Petroleum Prod	8-Henning	TE&L	Sec-410	T.D. 1096	30
Holbrook-Woods	1-Davis	TE&L	Sec-1395	896-899	15
Allday-Carter	8-Johnson	Sergeant	Blk-14	596-598	2

PANHANDLE

Gray County

Whalen-Warren	1-Williams	ACH&B	Sec-7 Blk-1	T.D. 3138	Dry
White Eagle	1-Shaw	ACHTB	Sec-5 Blk-1	2845-2860	35
Mid-West Expl	2-Holmes	I&GN	Sec-86 Blk-3	3258-3265	240
Magnolia	2-Parrish	I&GN	Sec-150 Blk-3	3228-3253	35

Hutchinson County

Sand Creek	2-Jasper	TC	Sec-23 Blk-M-23	3136-3148	20
Phillips	3-Johnson	Whitley	Sec-2	2938-2940	309

Wheeler County

Martin-Debons	1-Gossett	H&GN	Sec-101 Blk-23	1603-1633	34M
Upham	1-Lamb	H&GN	Sec-91 Blk-17	1970-1973	33M

WEST TEXAS

Crane County

Duffey	3-Cowden	CCSD	Sec-18 Blk-4	2342-2397	50
Gulf Prod	56-McElroy	CCSD	Sec-200 Blk-F	2803-2911	450

Glasscock County

White Eagle	1-Cox	....	Sec-29 Blk-33	T.D. 3227	Dry

Howard County

Henshaw	1-Eason	T&P	Sec-6 Blk-32	2208-2240	2240
Marland	10-Clay	W&NW	Sec-139 Blk-29	1793-1798	65
Owen-Sloan	3-Roberts	W&NW	Sec-136 Blk-29	1322-1332	40 (18 Hrs.)
Sprague	2-Roberts	W&NW	Sec-156 Blk-29	2960-3002	2040
Magnolia	11-Chalk	W&NW	Sec-124 Blk-29	1645-1678	30
F.H.E.	7-Roberts	Roberts	Sec-136 Blk-29	3835-3845	1230
F.H.E.	4-Roberts	W&NW	Sec-136 Blk-29	2960-2964	560
Empire	1-Clay	W&NW	Sec-127 Blk-29	1766-1767	125

Kent County

Phillips	1-Sandell	H&TC	Sec-429	T.D. 4192	Dry

Pecos County

McMann	2-Smith	TC	Sec-25 Blk-194	1640-1722	295 (1 Hr.)

Terrell County

Champlin	1-Cowden	CCSD	Sec-5 Blk-T-2	T.D. 3552	Dry

Upton County

Gulf Prod	7-Lane	GC&SF	Sec-3	1983-2041	8

Completions in North Louisiana and Arkansas, Week Ended December 6, 1928

Louisiana—Webster Parish—Spring Hill

Company	Well	Location	Depth	Yield
Northwest La. Gas Co.	Pinewoods Lbr. Co. 7	37-23-11	3041	35 bbls.
Northwest La. Gas Co.	Pinewoods Lbr. Co. 8	37-23-11	3418	salt water, abd.

Webster Parish—Cotton Valley

Superior Oil Co.	McCook & Hibbler No. 1	21-21-10	4679	25M gas

Bossier Parish—Elm Grove

Barrett & Morgan	Murff No. 1	16-17-11	2516	dry, abd.

Bienville Parish

Baca Drilling Co.	State No. 1	16-16-10	2561	dry, abd.

Sabine Parish—Zwolle

R. L. Gay, Trus.	Bowman-Hicks No. 2	14-7-14	2130	50 bbls.

Ouachita Parish

Company	Well	Location	Depth	Yield
Ark. Nat. Gas Corp.	Potts No. 1	30-19-4E	2186	3M gas

Richland Parish

Magnolia Pet. Co.	M. L. McCoy No. 1	29-16-6E	2450	20M gas

East Texas—Panola County

Natural Gas Prods. Co.	Tom Moore No. 2	B. C. Jordan HRS	2695	6M gas

Arkansas—Union County—Rainbow City

Lion O. R. Co.	C. B. Nash No. 3	6-17-13	3062	700 bbls.
Magna Prod. Co.	El Dorado Realty Co. 7	17-13	3091	180 bbls.
Magnolia Pet. Co.	Carroll No. 4	1-17-14	3010	80 bbls.
Ohio Oil Co.	G. B. Nash No. 3 Acct. 1	6-17-13	3020	1600 bbls

Completions in California, Week Ended December 1, 1928

Long Beach

Company	Well No.	Section	Depth	Init. Prod.
Shell	Hutton 8	....	7498	900
Shell	Martin 6	....	7476	800

Santa Fe Springs

Bellview Oil Syn	Gros 2	....	6029	3000
Universal Cons	O'Connell 3	....	5784	6057

Athens-Rosecrans

Company	Well No.	Section	Depth	Init. Prod.
Barnsdall	O'Dea 13	....	5404	1646

Seal Beach

Marland	Bixby 25	....	4775	1504

Ventura Avenue

Shell	Gosnell 27	....	7120	650

Drilling Operations in Oklahoma, Kansas and Texas, Week Ended December 8, 1928

	Dec. 8 Loc.	Rigs	Drg.	S.D.	Week Ended Total	Dec. 1, '28 Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Osage	1	8	40	2	51	4	5	35	2	46
Bristow-Cushing	6	8	36	7	57	7	7	38	4	56
North Oklahoma	7	9	49	27	92	6	4	48	30	88
South Oklahoma	12	6	83	30	131	9	8	86	33	136
Muskogee	..	6	41	29	76	..	7	39	28	74
Okmulgee-Bristow	8	31	57	26	122	8	39	53	27	127
Seminole Dist.	21	92	346	22	481	25	98	336	25	484
Total Okla.	55	160	652	143	1,010	59	168	635	149	1,011
KANSAS	..	*45	246	52	343	..	50	237	53	340

	Dec. 8 Loc.	Rigs	Drg.	S.D.	Week Ended Total	Dec. 1, '28 Loc.	Rigs	Drg.	S.D.	Total
TEXAS										
Central	59	29	196	136	420	64	24	205	139	432
Panhandle	15	19	96	50	180	20	19	88	55	182
N. Central	31	24	135	33	223	29	33	131	39	232
West	12	9	41	45	107	34	7	118	79	238
Total Texas	117	81	468	264	930	147	83	542	312	1,084
New Mexico	8	4	30	19	61	9	2	33	13	57
GRAND TOTAL	180	290	1,396	478	2,344	215	303	1,447	527	2,492

*Loc. and Rigs are combined.

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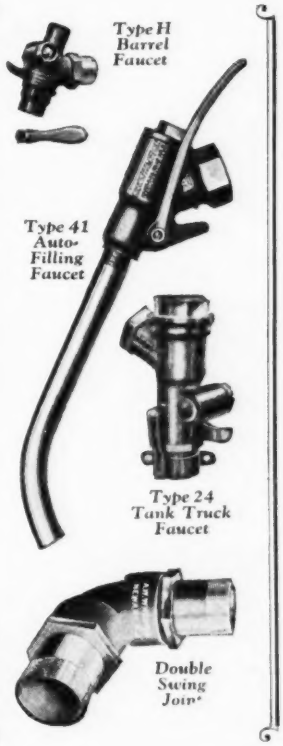

Above: Gulf Refining Company Tank Truck, equipped with Wheaton Type A Faucets. At right: A clearer view of this faucet.

etc., have long been recognized throughout the oil industry as the foremost products of their kind. Their reputation for *quality* extends back to the days when the oil business was known as a $750,000,000-industry, as contrasted to the $11,000,000,000-industry of today.

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Wildcatting in Kansas

By John Power
N. P. N. STAFF WRITER

WICHITA, Dec. 8

WITH a renewed activity in Kansas oil circles the four counties, Sedgwick, Harvey, Marion and McPherson, in the south central part of the state, comprise the most active of Kansas wildcat districts. However, the western part of the state has not been neglected, several large blocks having been assembled, with scattered wildcats drilling in various locations in such counties as Ellis, Rush, Rook and Russell.

What is found by the three offsets to the Gypsy-Bu-Vi-Bar-Marland well which are all drilling below 3000 feet will do much to determine the future prospects of the field. In the Allison & Fitzwilliams No. 1 Gsell, a mile and a quarter south of the Gypsy-Bu-Vi-Bar-Marland well, no sandy lime was found on top of the Wilcox, which formation carried water. At last reports there was some talk of this well being deepened in search of silicious lime production at greater depths.

Leasing has been active throughout the county generally, with several large blocks of acreage assembled, and wells drilling. Two miles northeast of the producer in 12-26S-1W, Hartman and Skaer are drilling at about 3700 feet in the SE SW 35-25S-1E. T. B. Slick is said to be heavily interested in this block, which covers some 3700 acres. Almost adjoining this block on the north the Marland interests have a well drilling in the SW NE SW of 16-25S-1E. Last reports from the well said that the 12-inch casing, which had been set at 1193 feet, had collapsed.

Two miles due east of the above well the Barnsdall Oil Co. is fishing at 1400 feet in the well it is drilling in the NE NW of 24-25S-1E, in the center of a large block.

Blocks have been assembled all along the eastern edge of the county. Cardwell et al. have a block centering around 22-25S-2E. A few miles south of this the Shell Petroleum Corp. has a block on what is reported to be a core-drilled structure. Acreage holdings embrace part of northern 26S-2E. Shell has some more acreage in Twp. 29S-2E, on which Tatlock et al. are drilling. This combination has a well in the NW NE of 6-29S-2E which, at last reports, was drilling at about 1750 feet. Acreage in the block embraces parts of southeastern 28S-2E and 29S-2E.

Sedgwick county has been the scene of leasing generally. Prices range from the one dollar per acre class up to nearly any price that the lessee wants to pay. The publicity which has been accorded the renewed leasing and drilling activity, as well as the discovery of the Gypsy-Bu-Vi-Bar-Marland well, has raised prices beyond what many operators consider the value of wildcat acreage. In some instances land owners have refused altogether to lease their land, a practice which will slow down materially the speed with which oil operators will develop such acreage as they do own.

Since this article was written the Marland Oil Co. has brought in a large well about seven miles from the discovery well north of Wichita in Sedgwick county mentioned in this article. Details regarding this new well will be found in earlier pages in this issue.

In the southeastern portion of Twp. 25S-1W, Connell et al. has a drilling well in the center of a block, the location of the well being the NE NE of 27-25S-1W. Last reports from the well put the depth at about 1300 feet.

Neat housekeeping on the lease—the wooden stile over the lines leading from well to storage tank. This is the Gypsy-Bu-Vi-Bar-Marland No. 1 Wright, ten miles north of Wichita, Kans., still making more than 1400 barrels daily after being completed Last August for 1680 barrels

In the township south the Shell has another block assembled, and the same company, together with the Marland Production Co. have a huge block which extends north and south for nearly five miles and east and west for nearly three. Two dry holes, one east and one north, have been drilled on the block but it is said that further drilling may soon be under way.

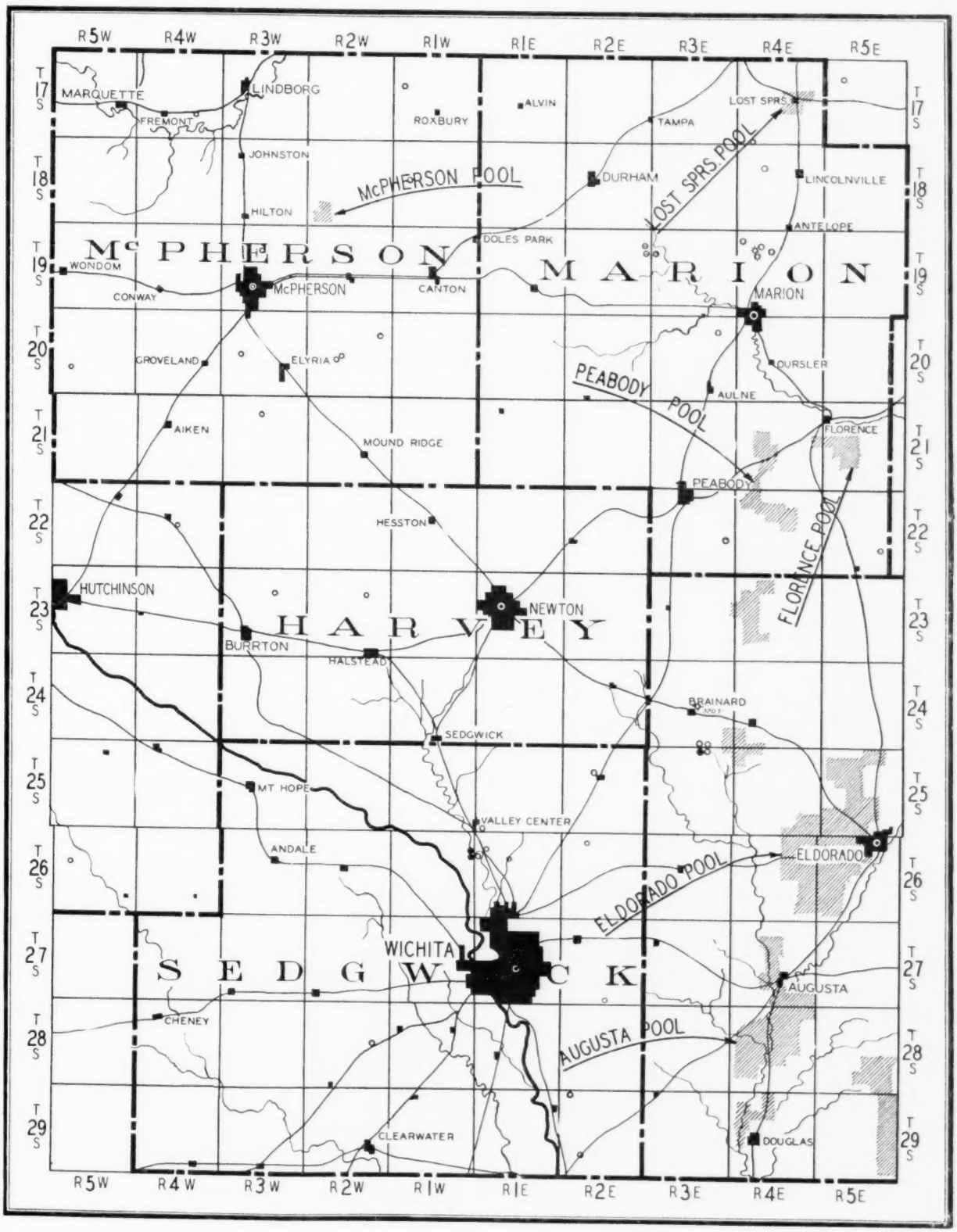
The Magnolia Petroleum Co. has acreage and a location to the south of the above block. Several commercial blocks have been assembled in the central part of the county. Roxana has been especially active with the core drill. L. H. Wentz, Ponca City operator, and the Miller Bros. of wild west show fame, are interested jointly in a big block in 27S-2W, while the Gypsy has assembled acreage covering parts of 28S-2W and 29S-2W. The Skelly Oil Co., as well as the Marland Production Co., have both been leasing in western parts of the county, Skelly Oil Co. having a block in central 26S-3W, and the Marland interests one in 27S-3W, and another in 28S-4W.

Continuing north from Sedgwick into Harvey county, leasing and blocking has been under way in this county, too. The Tidal Oil Co. has a block covering some seven and a half sections, in about the center of Twp. 24S-2E. Just north of this block the Marland Production Co. has a block in the central east portion of the township. The Sandford Drilling Co. has a commercial block of some six sections in the central western portion.

IN THE central part of the country, in central eastern 22S-2E, Skelly Oil Co. has assemdled acreage, while in 22S-1E the Dixie Oil Co. is represented. The Empire Oil and Refining Co. is represented with a block of some 14 sections in 22S-1E. A drilling well, being put down on their acreage by Hartman & Skaer in the center of the SE of 3-24S-1E is reported as being at about 1200 feet. The Derby Oil Co. also has a block in the northeastern portion of Twp. 22S-1W.

Shell has checkerboarded holdings in 22S-2W and along north-and-south block in 23S-2W. Such companies as the Sinclair Oil and Gas Co., the Gypsy Oil Co., the Amerada Petroleum Corp., Skelly Oil Co., and Prairie Oil & Gas Co., are repre-

The Four Active Wildcat Counties in Kansas



New drilling is expected to develop more of interest in McPherson, Marion, Harvey and Sedgwick counties, than in other portions of Kansas. Present pools are shown by shaded areas. Readers should save this map since reference to wells in the territory it covers will appear in these columns from time to time

sented with holdings of various sizes in this part of the county. The Shell is skidding a rig from over a lost hole in the SW NE SW of 11-23S-2W. A 4000-foot dry hole has more or less slowed down drilling in Twp. 24S-3W, but north of this, in 23S-3W the Marland interests are represented with a large block, and in the next township north the Gypsy has a group of leases in the southeastern part of the township.

Marion county contains in its northeastern part the Lost Springs pool, producing from the chat found productive in many places along the Abilene arch. There has been much checkerboarding of leases rather than an accumulation of large blocks on the northeast southwest trend from Twp. 17S-4E (in which there are three locations). Through central 18S-4E and eastern 19S-3E and 19S-4E leasing has been general, with two blocks appearing, one in the northeastern part of 19S-3E, and the other in 18S-3E, the former a Prairie Oil and Gas Co. holding and the latter a commercial block on which Hartman and Skaer have a location in the NE NW of 28-18S-3E.

The Empire Oil and Refining Co. has a drilling well, last reported depth being about 1100 feet, in the center of a 2500-acre block in 20S-3E. Swinging westward into Range 2E the White Eagle has a block collected covering parts of central eastern 21S-2E and 21S-1E. Northeast of this block the Empire has leases surrounding a location in the SW SE of 28-20S-2E. The same company has another and larger group of holdings covering much of the eastern part of 19S-2E, and extending northward from a location in the 27-19S-2E. The Empire is drilling a well in the SE NE of 12-19S-2E, on which the last reported depth was about 800 feet.

McPHERSON county, which lies due west of Marion county, is also the scene of some drilling. There are 15 wells, part of which are actively drilling and part of which are only locations as yet. An interesting feature of these wells is that all but three of them are in an east-west line running through the county in Twp. 18N. Ranges 1W, 2W, and 3W are all represented, with the majority of the wells in Twp. 18S-2W.

Of the wells drilling in McPherson county, the deepest at the present time are: the McPherson Oil & Gas Co. No. 1 Norling, in the center of the NE of 9-17S-2W, drilling below 2900 feet at the last report; the well of Newman et al., in the NW NE of 2-17S-1W, which is below 3000 feet, and the White Eagle Oil & Refining Co. No. 1 Larson, in the SE NW SW of 31-18S-2W, which has a show of oil in sandy lime from 2345-2365 feet.

Of two completions during the week, one showed for a small well, and the other was a dry hole in the Wilcox. The former was the Mid-Continent Petroleum Corp. No. 1 Hawkinson, in the NW SE of 32-18S-2W. This test had an estimated three million cubic feet of gas per day, with 112 barrels of oil, and three per cent water in the chat from 2965-2982 feet. When deepened to 2988 feet, a hole full of water was encountered, and the well is being plugged back in an effort to shut off the water. The Galt Brown et al. No. 1 Fross, in the center of the NE of 18-17S-1W, had a hole full of water in the Wilcox encountered at 3305-3330 feet.

McPherson county is the fourth of the Kansas counties which are getting the biggest play at the present time. Leasing has been general throughout the eastern ranges, with the Shell Petroleum Corp. the principal buyer. In the northeast corner of the county, in Twp. 17S-1W, the Amerada has assembled a sizable block. The Sinclair, Mid-Kansas, The Texas Co., as well as the Amerada, appear frequently on a lease ownership map of this part of the county.

A block on what is reported to be a core drilled structure is held by the Gypsy Oil Co. covering parts of Twps. 17S-3W, 17S-2W, 18S-3W, and 18S-2W. Other blocks appear on a northeast-southwest line clear across the county. The largest of these is that held by the Mid-Kansas in eastern 20S-5W, and in 20S-4W. None of these are being drilled on at present, there being comparatively little drilling going on outside of the gas field in 18S-2W.

Rough Baffles Throw Out Mist Of Oil from Gas Stream

LOS ANGELES, Dec. 8

ROUGHENED baffle surface, which collects the oil film and prevents it from working its way along the direction of the gas flow and getting back into the gas stream before it has time to drop out, is a feature of the inlet gas scrubber at a natural gasoline plant erected in November for the Norwalk Co. at Santa Fe Springs, California.

The plant has a daily capacity of 35,000 gallons. It is the first new plant to be built in this field to run gas from the new deep sand.

The new baffles are designed of pressed steel, with slight ribs thrown across them. To these ribs sheets of screen wire are riveted. The screen provides an extremely rough surface, which collects the oil mist in the form of film. This film trickles down between the screen and the wall of the baffle into a seal in the bottom of the baffle nest. From this nest it is admitted through tubes into the liquid body in the bottom of the scrubber shell.

These baffles are arranged in rows uniformly spaced, and staggered, so that the gas sharply changes direction at each row that it engages. The length and spacing of the baffles is such that the pressure drop for 20,000,000 cubic feet, of gas, through an 8 foot by 14-foot scrubber, is less than a quarter of a pound.

The plant also includes a vapor fractionator for producing natural gasoline of extremely low end point.

The design of the inlet gas scrubber is the result of extensive study of the baffle type of scrubber in an effort to determine just why the baffle scrubber did not throw out a higher percentage of entrained material.

Observation disclosed that, regardless of shape of the baffles, wherever a smooth baffle was used, the film of oil that collected on the baffle would tend to work its way along in the direction of the gas flow and eventually get back into the gas stream before it had time to drop down, out of the way of the gas flow.

All equipment in the plant is riveted construction, built for 50 pounds working pressure, with a safety factor of 5. The plant is so designed that it will handle a large overflow at high efficiency.

A battery of four 150 horsepower boilers supplies steam to the plant through two separate steam headers, one to the pumps and the other to the preheaters. The latter are elevated so the condensate may be returned direct to the boilers. The oil circulating system is designed for 550 gallons per minute.

The cooling tower is arranged in two sections so that the temperature of oil and vapor entering the main cooling tower is below 100 degrees Fahr. J. A. Campbell equipment is used throughout the plant.

Oil Is Second in Export Value

CLEVELAND, Dec. 8.—Exports of petroleum in the first nine months of 1928 were valued at $397,000,000, a gain of $25,000,000 in value over exports in the first nine months of 1927. Value of petroleum exports was exceeded only by raw cotton this year.

LOS ANGELES, Dec. 8.—C. L. Campbell, official of E. B. Badger & Sons Co. of Boston, is in California visiting the company's offices at Los Angeles and San Francisco, and at the same time is making a survey of the market for his company's fractionating equipment.

"Buttons" on Sucker Rods Keep Tubing Free From Paraffin

By Lawrence E. Smith
N. P. N. STAFF WRITER

BARTLESVILE, Okla., Dec. 8 INVESTIGATIONS of down time on wells in the Borger district, Texas Panhandle, by the Phillips Petroleum Co. have resulted in two discoveries: One a method of keeping tubing free of paraffin and the other a cheap method of checking efficiency of counterbalancing.

Paraffin, of course, is one of the important factors in keeping a well off production in the Panhandle. It is not a deposition on the sand, as is the case in a majority of fields, but in solution in the tubing, interfering with volumetric efficiency of the pump.

The Phillips company method of keeping tubing free of paraffin is to cast "buttons" of tough babbitt metal on the sucker rods. They are about four inches long and are cast in one piece on the rod, from six to 35 being thus placed on a string of rods, depending on the degree of trouble from paraffin in the well. The upper 1000 feet of a well is the distance which usually gives the trouble, the paraffin being deposited in that space.

Patent has been applied for in the name of L. B. Holland, petroleum engineer of the company, the claim being based on the use of a metal of melting point much lower than that of the rod metal. No change in the molecular structure of the rod occurs because not enough heat is applied when the babbitt metal is cast on the sucker rod. Earlier experience in welding steel washers to the rod resulted in rod breakage at the point of welding.

The buttons are cast in the same diameter as the working barrel, which give one-fourth inch clearance inside the tubing. Their use has been quite satisfactory thus far. The record of one well shows that, since equipping it with the rod buttons, it has pumped continuously for 30 days without pulling rods. Its previous history had been a rod pulling and paraffin swabbing job every five or six days.

The company experimented with various methods to reduce trouble from paraffin. Back pressuring was tried on three wells and the paraffin deposition was reduced. In the case of one well continuous operation without steaming was carried on about five times as long as it previously had been. The record on rod breakage was not so good. There were six breaks in 575 hours with back pressure and one in 521 hours without.

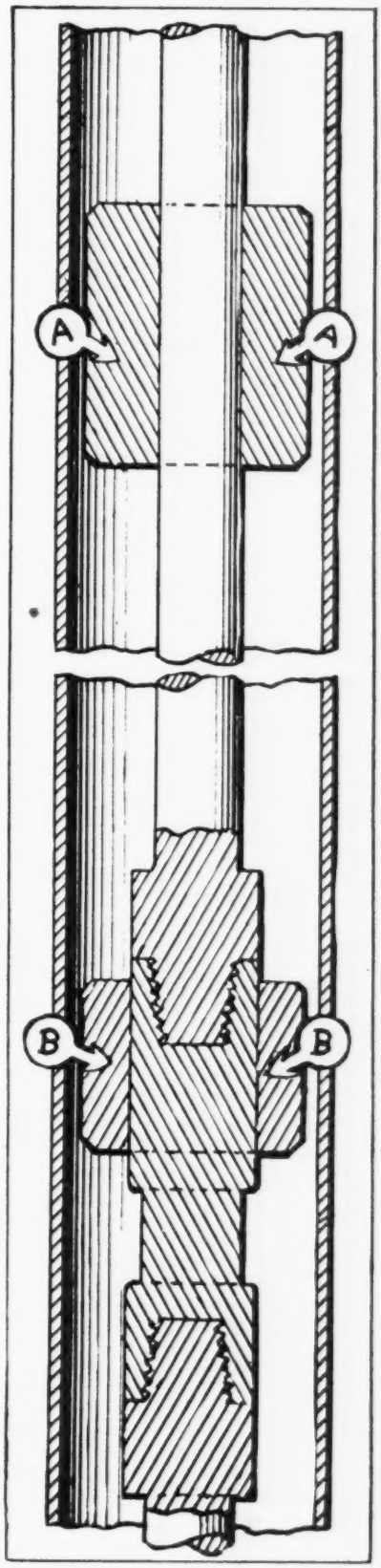
Chiefly, the objection to back pressure was the loss in production which on the three wells averaged 24 per cent per well. Emulsification of crude oil also increased, going from 1.8 per cent on one well to 12 per cent and on another from six to 16 per cent. Treating costs consequently were increased.

Steam and hot water are two standard methods of keeping down paraffin. The Phillips company has been using both. Injection of steam through special openings in the tubing is satisfactory except that special devices are required which add considerably to the cost of operating. Then it is sometimes necessary to steam one or more times in a day, also an expensive process.

Hot water has been used fairly satisfactorily and it has the advantage of raising the temperature of the tubing at the top of the hole where the paraffin is deposited to a high enough point that it becomes fluid and moves along with the oil as it is pumped out. It has the disadvantage that, in dumping hot water in the hole, the temperature of the tubing may be raised at a time after the well has flowed a head of oil through the tubing and no fluid will be in contact with the paraffin coating on the interior of the tubing. The effect then would be to "cook" the paraffin to the inside wall of the tubing. Water also causes the hole to cave.

Another company in the field started the practice of using split washers to control paraffin. They were welded to the rods with the result that the heat changed the characteristics of the rods as before mentioned. The next step was to use washers made of cold rolled shafting which were split and after being placed on the rods were closed and spot welded together. Breakage occurred on many of them on the side opposite the weld. Pieces would go down into the hole and interfere with the pumping operation of the working valve and also cause accidents while pulling rods. Sometimes the pieces would fall on top of the ball of the standing valve, causing the well to cease pumping.

In studying the causes of down time and seeking to reduce it, Phillips company engineers went into the question of counterbalancing. As the work had to be done quickly, it was decided to check the time of stroke only, without regard to maximum and minimum load which would have been



A and B are the babbitt buttons cast on sucker rods to prevent paraffin from depositing. They are four inches long and just clear the walls of the tubing. Used in the Borger district, Texas Panhandle, by the Phillips Petroleum Co.

revealed by the longer and more expensive dynamometer method.

The procedure adopted was to measure the time required for 10 strokes up with stop watch—observing the travel of the crank—and 10 strokes down. The difference between the total time for the upward and the downward strokes, divided by 10, would indicate whether the counterbalance was functioning effectively on the down stroke. Absolute accuracy is not plain for the method of course, as much depends upon the sharpness of vision of the observer. It is, however, a cheap and fairly effective method of determining whether the counterbalance requires more or less weight.

Tabulation of the results of this study revealed the number of rod breakages over a given period. As the company had under investigation at the same time the efficiencies of different makes of rods, the wells timed were grouped according to the kind of rods they were using. On the first group of wells, 50 strings of rods were involved. The facts revealed by this study were as follows:

FIRST GROUP—50 WELLS

Time interval*	Rod breakages	Fluid lifted** pounds
Equal	9	5,100
1/5 second	15	10,260
2/5 second	1	7,630†

SECOND GROUP—75 WELLS

Time interval*	Rod breakages	Fluid lifted** pounds
Equal	3.3	36,300
1/5 second	5	43,500
2/5 second	7	37,200

THIRD GROUP—82 WELLS

Time interval*	Rod breakages	Fluid lifted** pounds
Equal	7	15,860
1/5 second	7	11,990

*Difference in time between up and down strokes.
**Pounds of fluid lifted per day.
†Only 4 wells timed.

In general, the wells followed the rule that, where there was no difference in time between the up and down strokes, in other words, where the well was perfectly counterbalanced, rod breakages were reduced. As each group timed consisted of wells using the same make of rods, the difference can be said to be due to counterbalancing, generally speaking.

One of the surprises revealed by the study was a reversal of the generally accepted theory that the more gas a well makes the easier it is on rods. Pumpers will classify a well as poor, fair or good, according to the "liveliness" of the well. A check-up on 75 wells was made, recording the average number of breaks per well over the period of observation and the amounts of gas the wells made, taking the pumpers' estimates as to whether it made small, medium or large quantities. It was found in this study that the number of breakages increased with the amount of gas the well made. The data tabulates as follows:

Amount of gas	Number rod breaks	Fluid lifted
Small	2.7	30,700
Medium	3.6	44,800
Large	9	52,500

The explanation of why the livest wells have most rod breaks probably is that the surges of large amounts of gas through tubing empties it of its fluid and thus varies the load.

By putting into practice the ideas gained from the study of Berger district wells a reduction of between 25 and 30 per cent in down time has been effected. Such improvement in practice was in counterbalancing and correction of paraffin trouble.

New Equipment

Oxweld Acetylene Co., 30 E. 42nd St., New York City, has added to its line of accessories for welding and cutting the Oxweld cap and skeleton type helmet goggles for the protection of welders. The company claims the cap and goggles are durable, comfortable and convenient to wear.

* * *

Reading Iron Co., which formerly had its general sales offices at Reading, Pa., has transferred those offices to 50 Church St., New York City. P. N. Guthrie, Jr., for 22 years in the pipe industry, has been appointed vice-president in charge of sales for the company. H. F. Mattern continues as general sales manager.

* * *

The Oil Conservation Engineering Co., Cleveland, O., has moved its Tulsa offices from S. Boulder St., to 226 Tulsa Trust Bldg.

* * *

Granberg Meter Corp., 79 New Montgomery St., San Francisco, has off the press eight bulletins, Nos. 18 to 25, inclusive, devoted to as many different airport service pit units which it has placed on the market recently.

The bulletins contain a complete description and drawings of about every kind of apparatus necessary for airport gasoline and oil service, the company claims. Some bulletins are devoted to the two-door and three-door units equipped with motor driven pumps, complete in themselves and requiring only underground storage for gasoline and power line in addition to each unit.

Another bulletin describes units without motor driven pump. Others are devoted to units to which water and air facilities may be added later, only gasoline being provided at first.

* * *

The International Derrick & Equipment Co., Columbus, O., was among the companies that exhibited at the International Aeronautical Exposition Dec. 1 to 9 at Chicago while the American Petroleum Institute was in session.

This company featured its standardized steel buildings, airplane hangars and other airport and airway equipment.

* * *

Westinghouse Electric & Mfg. Co., Pittsburgh, Pa., has just published an illustrated booklet entitled, "Electrification in the Petroleum Industry."

There are 24 pages devoted to brief bits of history, useful information, and a general discussion of the petroleum industry's methods, all written in the oil man's language.

Sections are devoted to discussions of auxiliary equipment, arc-welding, turbine applications, condenser equipment for refining, and filling station equipment.

* * *

W. F. Robertson Steel & Iron Co., Cincinnati and Springfield, O., has purchased the plant of the Kelly-Springfield Motor Bus & Truck Corp., Springfield, O. The new plant consists of five modern factory buildings covering six acres, together with 626 feet of railroad sidings and loading platforms.

The Robertson company, which makes a general line of cans, metal signs, and display cabinets, will augment its present facilities by adding new lines of the latest automatic machinery. It will also include all the equipment of the Republic Can & Metal Co., Inc., Philipsburg, N. J., which it purchased outright some time ago. This expansion will enable the company to manufacture a complete general line of decorated and plain metal containers. It will also make porcelain enamel signs and other porcelain products.

Recently the company purchased the Pittsburgh Sheet & Tin Plate Co. at Marietta, O., where it already owns the Hudson Sheet & Tin Plate plant, giving it an annual capacity of between 50,000 to 60,000 tons of tin plate and tin mill black products.

* * *

Federal Motor Truck Co., Detroit, Mich., has appointed R. W. Ruddon as first vice-president and general manager, according to M. L. Pulcher, president. Mr. Ruddon has been with the company 15 years.

* * *

Taylor Instrument Co., Rochester, N. Y., has acquired C. E. George, formerly western manager of the American Schaeffer & Budenberg Corp., for its sales staff. Mr. George will be in the Chicago offices of the company.

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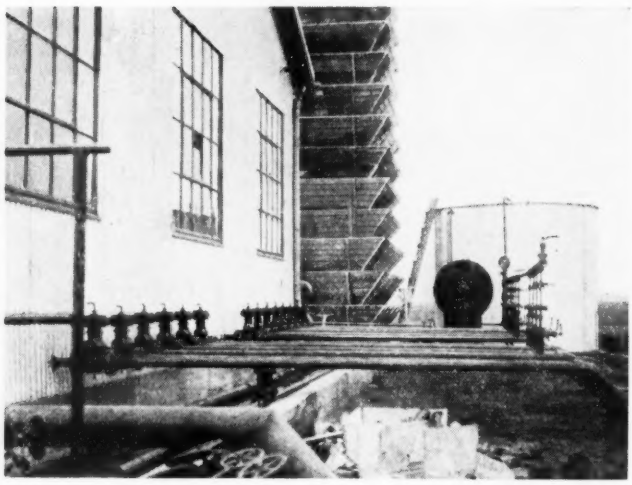

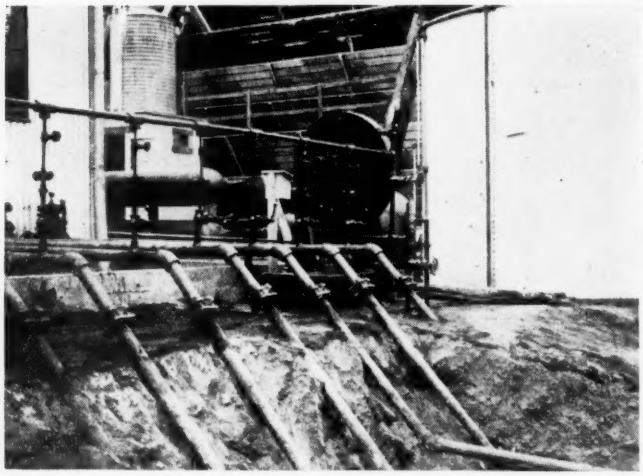

Left—Showing manifold connections with gas lines pumping tret-o-lite into wells in Marland's repressuring program at Seal Beach, Calif., to break up heavy emulsions in edge wells. The white tank holds the tret-o-lite and the pump is shown in front of the tank. Right—Close up view of discharge manifold connections with gas lines. The valves just above the outlet are used to regulate the flow of tret-o-lite

Pump Cutting Agent, with Gas, In Wells To Break Thick Emulsion

By A. H. Bell*

THE Marland Oil Co. of California started repressuring the Bixby sand at Seal Beach in September, 1927 and, after one year, the results have been sufficient to indicate that repressuring may be used as an effective method of prolonging the flowing life of wells and increasing the ultimate yield from a given oil sand.

The early results of this repressuring test were outlined in the NATIONAL PETROLEUM NEWS of Dec. 21, 1927. The results since that time have been consistent with the early indications and valuable data have been obtained.

The proper location of key wells has been found to be of very great importance. The quick results in increasing the production of up structure wells at first led to the conclusion that the key wells should be located at the edges where the drive of the gas up structure would be aided by the natural edge water drive. Later developments and study however, indicate that if the key wells are located well up the flank of the structure or on top of the structure the results will be more uniform and of longer duration, even though the returns in increased production are not as quick. During the past year, 200,000,000 cubic feet of gas has been put into the Bixby sand which resulted in an increase over normal production of about 240,000 barrels.

Due to water encroachment and the limited number of Bixby sand wells, the repressuring experiment has been stopped and the information obtained is being used as a basis for outlining a program for later repressuring in the Selover sand which lies below the Bixby sand and is now being fully developed.

The use of the gas lift has been highly successful on this property and has reached a high state of efficiency. Various combinations of equipment for furnishing an intermittent flow or displacement flow have been found to be more advantageous than the plain gas lift.

One of the greatest problems in the use of the gas lift has come from emulsions in edge wells. Some wells on gas lift produced such viscous emulsions that they could not be produced into the gas traps.

The emulsion is at first thin, but commences to thicken rapidly after it exceeds 60 per cent or 70 per cent of the total volume of fluid. It remains thick until some time after free water has begun to show itself. This thick phase may extend over many months.

With the end in view of arriving at a possible solution of this difficulty, the Marland Oil Co. of California in collaboration with Wm. S. Barnickle & Co., early in 1928, commenced the experiment of pumping tret-o-lite down a well, together with the gas. Tests were made with portable equipment which indicated that the thick emulsions could be broken.

The results have been interesting and successful within limits; so much so that permanent installations have now been made at each of the two compressor plants of the Marland Oil Co. at Seal Beach.

A Worthington 1″ x 4″ Triplex high-pressure pump, with a capacity of about 140 barrels per day, was secured and the discharge manifold connected to all gas lines. Two mixing tanks, one of 100-barrel and one of 10-barrel capacity, were connected to the suction. These installations provided for pumping tret-o-lite solution into as many gas lines as desired at each plant.

About 20 to 40 barrels of 1 per cent water solution is used per well, giving about one part in 6000 of tret-o-lite. By the use of this system wells making a heavy thick emulsion have been improved so that a thin emulsion is produced, which will allow most of the water to be drawn off in the tanks and leave an oil cutting from 8 to 10 per cent.

THIS of course disposes of the most serious operating problems. But it has not been found possible to date, to reduce, or prevent the formation of thin emulsions. (It should be noted in passing that tret-o-lite is not successful in treating emulsions from the wells in question on the surface, but that it is used in small quantities in conjunction with electric dehydrators, as an aid to these.)

On one well the casing pressure was reduced about 90 pounds and the production increased about 100 barrels by reducing the friction of the emulsion in the tubing. In most cases the system is used on the wells only when they "go bad", some wells making bad emulsions only in spells.

*Chief Production Engineer, Marland Oil Co. of California.

From its very inception the Halliburton organization has been conducted, not merely as an exerciser of valuable patent rights, but as a permanent and constructive force in economical oil production. No organization has done so much to advance the science of cementing; no organization has done more to conserve the petroleum resources of the nation. It belongs to the oil industry.

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Economic Success of Gas Lift Questioned As Applied in Seminole

TULSA, Dec. 10

REPRESSURING in connection with the air/gas lift operation has been carried on only to a very limited extent in the Seminole pool. In such few instances as it has been tried, results have shown the variation in underground conditions and the irregularity of structure will make repressuring exceedingly difficult.

This is the view taken by C. R. Swarts, C. R. Bopp, and W. S. Morris in their preliminary engineering report on the Seminole pool of Seminole county, Okla. These engineers of the Bartlesville station of the Bureau of Mines, have lived in the Seminole pool since its early development. In their preliminary report only the Seminole City pool is discussed, the entire area being covered in a more comprehensive report which is to be issued later.

The limited repressuring operations have been confined to structural highs for the purpose of retarding the water encroachment. It was an absolute failure in one trial, owing to the large amount of water present, and in another, in which it was used for a short time, it resulted in an increased production in two wells adjacent to the input well. Gas lift application has increased production to some extent in a few offset wells, showing the effect of pressure control and indicating what might be accomplished by injecting gas into the sand during the flush stages of production. Repressuring on the structural highs seems the most practical way of confining the water to the depressions.

A wildcat producer drilled in Seminole pool in the area which was cooperatively tested early this year

In their discussion of the air/gas lift as applied to the Seminole pool, the authors state that the value of the lift depends on the purpose for which it is applied. The primary purpose of the lift as applied in Seminole pool was to increase daily production, and its success in that respect is unquestionable. The increased rate of production, however, contributed largely to the depression throughout the industry occasioned by overproduction. The rate of production, then, would seem to be an economic question rather than an engineering problem imposed by the application of the lift. The reduced price has more than offset any gain derived from increased production, and the lift as applied in the Seminole pool has not been an economic success, according to the authors of the report.

Although the increased rate of production has been unwarranted, the lift application has demonstrated a better means of regulating the pressure on the productive sand. The results indicate that with the proper application of the lift, an increase in ultimate recovery over that of the normal methods, i.e. natural flow and pumping. The effective control of reservoir pressures will tend to increase the ultimate recovery, the effective control of the pressure being indicated by the gas/oil ratios.

The report says that although the lift is not a cure for all production evils, where effectively applied it has the following advantages:

1. Regulates the rate of production.
2. Offers a means of effective pressure regulation.
3. Conserves formation gas.
4. Retards water encroachment.
5. Increases ultimate recovery.
6. Decreases the time of obtaining the ultimate recovery.
7. Decreases lifting costs.
8. Offers a means of operating deep wells where other methods fail.
9. Increases the rate of gasoline recovery over other methods.

Conservation of gas in the productive sand is of great importance as long as the energy in the gas is the propulsive force which brings the oil through the sand into the well. Gas can be conserved by proper pressure control applied to a well throughout all stages of production, and the pressure control can be assisted in retarding the pressure de-

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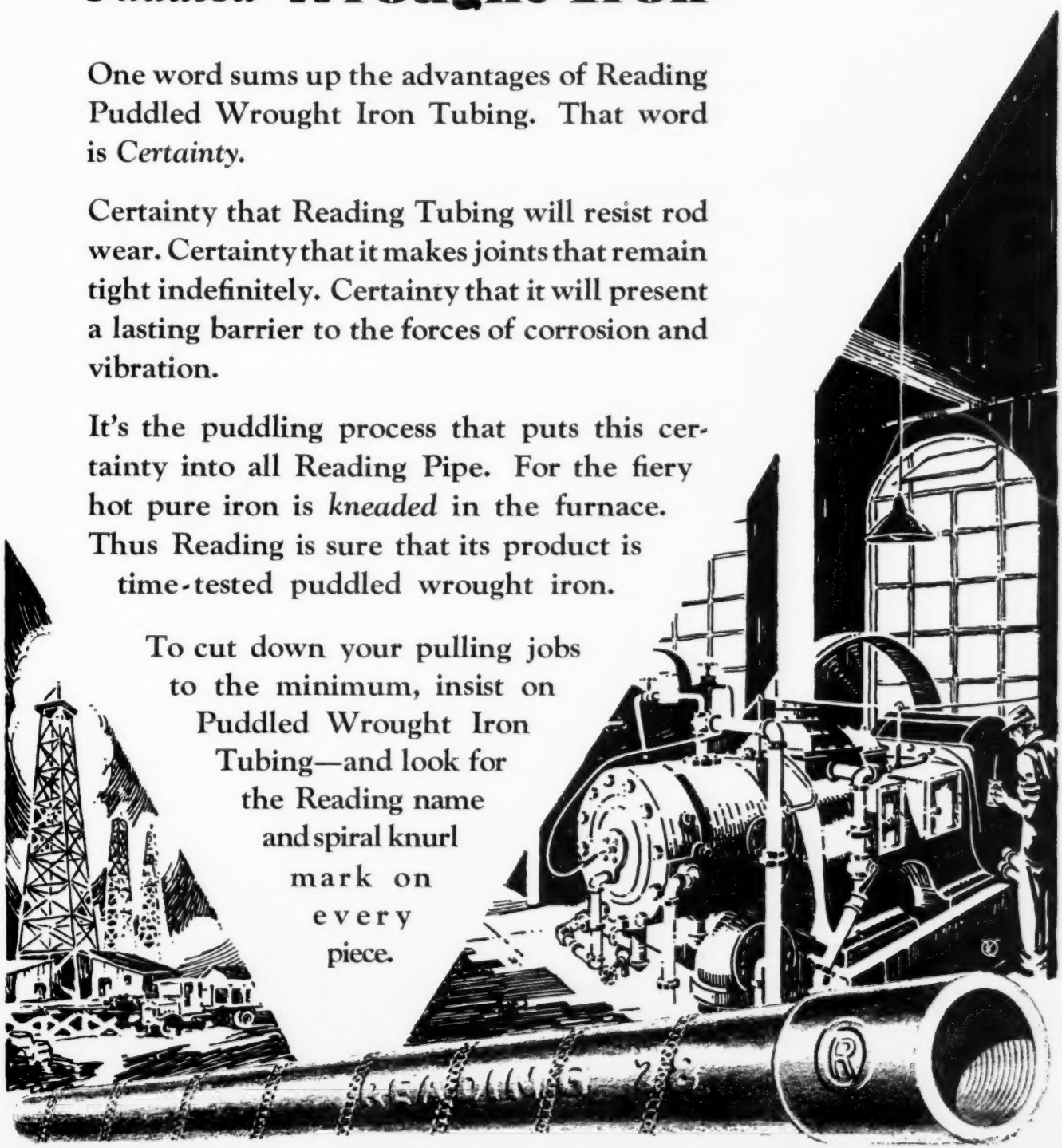

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cline by injecting gas into the productive sand through key wells. The conclusion which the report draws is that these two pressure control factors applied to a pool in such a manner as to permit the slowest decrease in reservoir pressure over the greatest period of time, will eventually result in the greatest ultimate production obtainable from the field.

Corrosion in the Seminole field was first noted in the Amerada Petroleum Corp Killingsworth No. 1-A, in 23-9-6. The well was producing on the gas lift, and was making water in varying amounts, the water supposedly coming from the Simpson dolomite. After being produced on the lift continuously for 120 days, the tubing was removed and found to be so corroded that it was unfit for further service. Galvanic action resulting from the contact of the tubing with the water probably caused this corrosion. The constant source of water supplied additional oxygen to carry on the cycle of ionization.

The second case of corrosion noted occurred in Mid-Continent Petroleum Corp. No. 3 Tayecho, in 24-9-6. A mixture of air and gas was used in producing with the lift, the well producing about 300 barrels of oil and 500 barrels of water during the period in which the corrosion took place. After six weeks of flowing on the lift, the tubing was pulled and found to be so badly corroded that it had to be discarded.

THE black scale found on the tubing broke off in large pieces in places, reducing the tubing to the thickness of cardboard. In other places the tubing showed large holes and the threads on the inside of the collars were exposed.

Conditions which caused the corrosion have not yet been determined Two theories which have been put forward are: first, that the additional oxygen supplied by the air/gas mixture increased the galvanic action mentioned in the first instance; second, because of the black scale referred to in the second instance it is believed that this type of corrosion was due directly to sulfur compounds occurring either in the oil, in the water, or in the producing sand, from which hydrogen sulfide gas could be formed.

Both types of corrosion may have been in progress at the same time.

The report, which was produced in cooperation with the State of Oklahoma, gives a brief but comprehensive outline of the history of the field, the part it played as a member of group of fields which came to be known collectively as Seminole, together with an outline of the drilling and producing problems encountered and the means which were used to overcome them.

The booklet contains several illustrations of sub-surface cross-sections

in the field. There are also graphs showing production, gas/oil ratios, and decline curves for all wells in the field as a whole. It is obtainable from the Bureau of Mines, Bartlesville, Okla.

Emsco to Make Equipment In New English Plant

LOS ANGELES, Dec. 8.—E. M. Smith, president of Emsco Derrick & Equipment Co., who also controls several other important manufacturing concerns, returned to Los Angeles from Europe Nov. 28 and announced that a factory had been purchased near London and that Emsco oil field equipment would be manufactured at the new factory to serve a number of foreign fields. Full details have not been worked out.

Mr. Smith also announced that arrangements had been made for the distribution of Emsco products in the Mid-Continent by the Continental Supply Co., a subsidiary of the Youngstown Sheet & Tube Co.

W. A. Trout, vice-president of Emsco Derrick & Equipment Co., after attending the Petroleum Exposition at Tulsa, left for Europe and joined Mr. Smith at London. The two returned to the United States together.

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., announces late developments in its line of oil testing instruments and automatic controllers, thermometers and gages. Its instrument line includes gaging equipment for tank cars and storage tanks, including outage and innage rules, gaging tapes, thieves and gaging thermometers.

Among its refinery equipment, one of the latest developments is the automatic recorder-controller. Its other new refinery developments include the special heavy duty liquid level controller, a new series of round case recording thermometers and recording pressure gages, a new series of steam operated controllers and industrial thermometers with Hespee glass.

Nov. 22 and 23 the tri-motored "Standard of California" with members of the permanent committee of the Sacramento-San Joaquin Rivers Problems Conference as passengers, left San Francisco to make a survey of these two rivers from the air, for the state government. This is the first time these rivers have been surveyed from the air.

Ford Bacon, El Dorado, Kansas, assistant sales manager of the Skelly Oil Co., flew to Tulsa Nov. 9, in a Spartan plane, to attend a meeting of oil men. He returned Saturday morning averaging one hour and 15 minutes flying time each way.

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Prominent contractors, who give Buckeye pipe line equipment their 100% endorsement by using it exclusively, are: The Oklahoma Contracting Co., Tulsa and Dallas; Williams Bros., Inc., Tulsa; The Hope Engineering Co., Mt. Vernon, Ohio; Smith Bros., Dallas; Sheehan Pipe Line Construction Co., Tulsa; and Connor & Son Construction Co., Kansas City, Mo. Many other owners are omitted because of limited space.

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Our Industry—A Page of Facts and Personalities

By Paul Wagner

National Petroleum News

Houston, Texas

Friends recognize as a well merited promotion the recent appointment of V. R. Currie to have charge of all employment and service activities of The Texas Co., with New York headquarters. Previously, since May 1, 1926, he had been Houston office manager of the employment and service department. His interest in accident prevention work won Mr. Currie a three-year directorship in the National Safety Council, the presidency of the Texas Safety Council and during the World war he was an assistant inspector of the United States Bureau of Mines. He is a graduate of the school conducted for employment managers at Rochester University after the war. Mr. Currie was born in Santa Barbara, Brazil, Dec. 2, 1884. His early education was received in the normal school at Sao Paulo. Afterward, he spent two years with a Sao Paulo importing firm before his family returned to the United States. Then he attended Cleburne Academy, taking a business course. After a period of employment by the Santa Fe railroad he started in the oil business in 1904 with the old J. M. Guffey Petroleum Co., which later became the Gulf Production Co. In 1906, he became stenographer to J. S. Cullinan, then president of The Texas Co. Since that time he has been continuously identified with one department or other of The Texas Co.

* * *

Three more oil offices have been opened at Midland as district headquarters for operations in the Permian salt basin of west Texas. P. S. Haury, formerly of the United States Bureau of Mines and more recently a petroleum engineer for the Simms Oil Co., Dallas, will represent his company at Midland. M. C. Lucky will be in charge of offices of the Houston Oil Co. of Texas. A. D. Molloy and M. S. Park of El Dorado, Ark., have also opened Midland offices.

* * *

George W. Crawford, president of the Ohio Fuel Supply Co., has been elected a member of the board of trustees of the Carnegie Institute, Carnegie Institute of Technology and the Carnegie Library of Pittsburgh.

* * *

J. B. Templeton of Muskogee, Okla., formerly chief geologist of the Sun Ray Oil Co., Tulsa, is in Venezuela for the engineering firm of Brokaw, Dixon, Garner & McKee. He sailed about Nov. 1, to be gone four months.

T. J. Donoghue

Besides occupying an outstanding position in the industrial life of the southwest, T. J. Donoghue, vice-president of The Texas Corp., is a leader in Houston civic affairs. Among other positions of honor he holds is the presidency of the Houston Club, leading organization of business men.

Mr. Donoghue was identified with the early life of The Texas Co., predecessor of the present holding corporation, serving under the presidencies of J. S. Cullinan, E. C. Lufkin, Amos L. Beaty and the present chief executive, R. C. Holmes.

The accompanying picture of Mr. Donoghue was taken at the River Oaks Country Club, Houston, where he was an onlooker at a golf match sponsored by "Wildcat Committees" of the Texas division, Mid-Continent Oil & Gas Association.

Walt M. Small, long identified with oil operations in Mexico, now hangs up his hat in proximity to the African equator. Friends may address him in care of the Compania de Petroleo de Angola, Caixa Postal 315, Loanda, Angola, Portuguese West Africa.

* * *

Pat M. Longan, for years active in the operating affairs of the Mexican Seaboard Oil Co. of Maine and its subsidiary, the International Petroleum Co., at Tampico, is now general manager of the Milham Exploration Co., another subsidiary of the Mexican Seaboard. He makes Los Angeles headquarters.

* * *

A. P. Berry, formerly engaged in export sales of oil well supplies with offices in the Woolworth building, New York City, is now representing the Lucey Products Corp., at Houston. He maintains office in newly established Lucey warehouses.

* * *

R. D. Parker, chief supervisor of the oil and gas division of the Railroad Commission of Texas, has announced revision of supervision areas and some shifts of personnel. The Mexia-Corsicana districts have been combined under Deputy F. H. Pierson of Corsicana. W. P. Laughter, formerly of Mexia, is in charge of a new district at Big Spring, Howard county. H. H. Fitzpatrick has exclusive charge of Winkler county supervision. Other deputies and their headquarters continue as follows: Leslie McKay, chief deputy supervisor, Austin; S. W. Blount, San Antonio; Goodson H. Rieger, Houston; R. C. Lomax, Beaumont; I. J. Killough, Eastland; O. H. Burkett, Cisco; W. J. Carden, Anson; G. W. Tilley, Olney; T. L. Colpin, Wichita Falls; J. L. Martin, Electra; J. T. Elliott, Amarillo; John Hoffer, San Angelo; J. F. Fouch, Laredo; J. M. McDonald, Pampa; J. A. Morehouse, Fort Stockton.

* * *

Ed F. Simms, who made a fortune in the Gulf Coastal oil fields, has returned to his Houston home after an extended stay at his Kentucky farm. Mr. Simms spends much of his time in New York and Kentucky, but has always retained his home at Houston.

* * *

Oil development in the Noodle Creek area of southwestern Jones county,

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This improved Fitting is the Refiners simple means of relieving "pressure drop". It rounds the corners of circulation and does away with turbulence in the flow thru your stills and cracking units.

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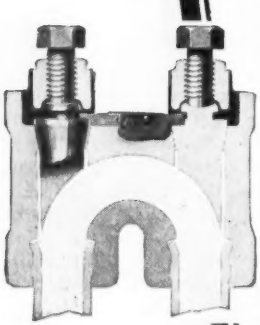

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RETURN BENDS

Texas, recalls to old-timers in the southwest the days when cattle rustling vied with grazing as an industry. Jones, Nolan and Fisher counties were the scenes of many stirring raids by cattle thieves in the late eighties. One of the most stirring in west Texas history was at the Joe Winters ranch, where the oil discovery of the Noodle Creek field was drilled and where development is still under way.

* * *

E. H. Devore, oil operator and geologist, is again making headquarters in Fort Worth. He is located at 704 West Second street. In the hectic days of Ranger and Burkburnett development he lived in north Texas, but afterward he moved to San Antonio and finally El Paso. Until recently, when he left El Paso, Mr. Devore had been engaged as a mining engineer in northern Mexico.

* * *

The case and package division of The Texas Co., operated under R. L. Drake as general superintendent, keeps cost within appropriate bounds by creating an incentive for maximum output. A bonus plan is in force both at the Port Arthur case and package plant and the Shook mill at Morgan City, Louisiana. Starting with what would be an easy day's output for an employe, on an hourly basis, a price is set on each additional 100 operations completed.

* * *

S. A. Morse has been elected president of the Union Natural Gas Co., Chatham, Ontario, succeeding F. E. Ogden, resigned. Joseph McKee is now secretary, succeeding Mr. Morse in that position.

* * *

W. B. (Blair) McCarter, who was in the scouting and statistical department of The Texas Co. before taking a geological course at the University of Texas, has entered the employ of the Humble Oil & Refining Co., Houston.

* * *

John Bahr, 78, failed by four months to complete 25 years of active field service for The Texas Co., but in his declining years he can look back over a wealth of petroleum history. Mr. Bahr was recently retired under the disability clause of the company's plan for employes.

Mr. Bahr's connection with The Texas Co. dates back to November 28, 1903 when he went on the payroll as a pumper at Sour Lake, in the Gulf Coastal district. His oil field activity, however, had included work on the Corsicana discovery well which is generally regarded as representing the first commercial oil production in Texas. Oil had been known in small quantities in Nacogdoches county back as far as the early 70's, but it remained for the Corsicana Water Works Co.'s discovery in Navarro

county to make development history.

One of the fond recollections of Mr. Bahr has to do with his aid in assembling the first rotary drilling outfit introduced in Texas by Sharp Brothers, who were closely associated with J. S. Cullinan and "Jim" Sloan in southwestern operations.

Mr. Bahr had only one accident in the entire period of his service. He was seriously injured in 1905 in a Sour Lake field fire.

* * *

B. A. Field, superintendent of the production department of the Transcontinental Petroleum Co., subsidiary in Mexico of the Standard of New Jersey, is spending his vacation in the vicinity of Burlington, Vermont.

* * *

G. L. Pilkington, formerly chief warehouseman in the north central Texas division of The Texas Co. producing department, has been transferred to California.

* * *

B. D. Heffner of the production department of the Mexican Gulf Oil Co., at Tampico, returned to his duties in September after a six weeks' vacation spent in California.

* * *

C. A. DeFrance has been appointed acting coast division foreman of the Union Oil Co. of California, succeeding T. F. Travers, resigned.

* * *

Robert Hulbert, son of C. B. Hulbert of the Oil Well Supply Co., at Tampico, is on his way to Boston where he will enroll at the Massachusetts Institute of Technology.

* * *

R. C. Beckstrom, dean of the recently established school of petroleum technology at the University of Tulsa, formerly headed the department of petroleum engineering, Colorado School of Mines, Boulder.

* * *

A. S. Bailey has been elected vice president, assistant manager and a director of The Texas Pipeline Co., of which B. E. Hull of Houston is president. A. M. Donoghue, vice president of the pipeline subsidiary, has been appointed manager of the crude oil purchases and sales department of The Texas Co.

Other pipeline changes include appointment of T. J. McMahon to be superintendent of operations, also continuing in charge of telephone and telegraph facilities. Oscar Wolf has been appointed assistant chief engineer. W. H. Shields is assistant superintendent of the west Texas division and George W. Fox has been appointed secretary to the president.

* * *

K. A. Garrison, Abilene district scout of the Skelly Oil Co., spent his vacation in Oklahoma.

Fig. 293
Flanged, Jenkins Extra Heavy Iron Body Automatic Equalizing Stop and Check (Non-Return) Angle Valve

No lagging boilers

Put a Jenkins Automatic Equalizing Valve on every boiler in the battery, and you can be sure that pressures will be kept uniform.

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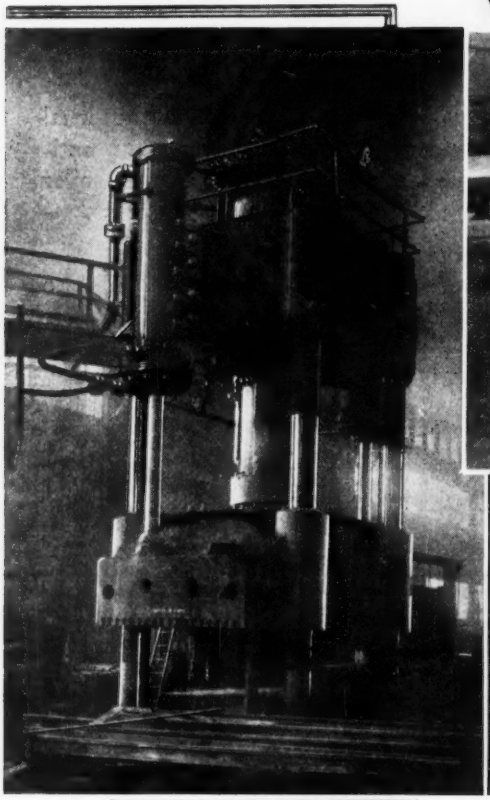
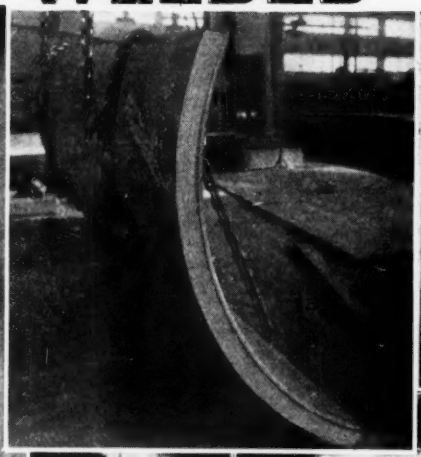
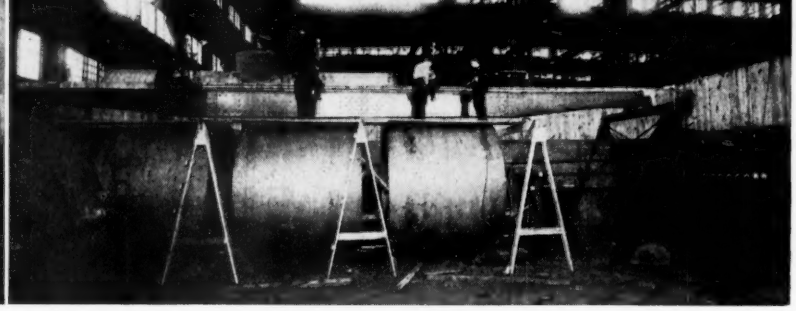
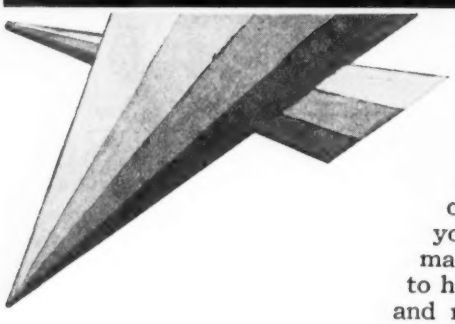
MAKING FLUID-FUSION WELDED STILLS





P.I.W.
STEEL PLATE CONSTRUCTION





The exclusive, advanced welding process used in the manufacture of Fluid-Fusion Stills is not the only operation which would baffle the ordinary still manufacture. The pressing, shaping, and handling of the huge plates, sometimes 6 inches thick, which form the walls of Fluid-Fusion vessels, would be entirely beyond the ability of the average equipped manufacturer. Special equipment is required to handle these operations just as an exclusive and radically different welding process is required to join the heavy plates.

New high pressures and temperatures are possible with Fluid-Fusion stills because these vessels are the result of exclusive processes and special equipment directed by expert engineering toward the task of manufacturing superior pressure vessels.

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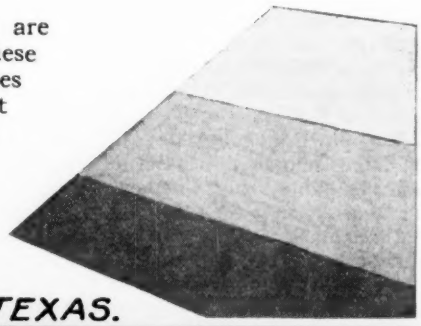

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Deep Drilling Limits To Be Indicated By Temperatures of Formations

By Paul Wagner
N. P. N. STAFF WRITER

HOUSTON, Dec. 7

UNDERGROUND temperatures recorded at various depths in different parts of the oil country indicate that eventually it will be possible to measure the limitations of deep drilling on data shown by a relatively small number of key wells in any single region.

Engineers and geologists will be able to measure the limits of drilling, as operations proceed, by projecting indicated temperature curves ahead to greater depths from the surface.

Increasing heat found as the drill goes down is considered generally to be a greater obstacle to deep operations than any other single problem. Extra heavy equipment can be built to drill 10,000 feet, or more, it has been shown in advances that manufacturers already have made. How to offset heat when temperatures reach approximate boiling point is another question, as yet unanswered.

It may prove to be the case, anyhow, that important oil possibilities do not exist at depths below those where boiling temperatures would be found. Nevertheless, such temperatures would appear to mark the physical and economic limits of deep drilling.

Underground temperatures observed in one region may have little specific bearing on conditions to be found in the sub-surface of another general area. They should show, however, that it is possible to drill to greater depths in some regions than others.

An example is found in the world's deepest test for oil, the University B-1 well of the Texon-Group 1 companies, in the Big Lake field of Reagan county, Texas.

Readings taken at various depths from 5700 feet to 8300 feet in the B-1 test show materially lower temperatures than were observed at some similar levels in Pacific Coast and Appalachian deep holes.

Assumption based on engineering data and experience would be that it is possible, therefore, to drill to greater depths in the west Texas embayment area than in the other regions mentioned.

Temperature readings on the B-1 well, as made by E. M. Hawtoff of the Texas Bureau of Economic Geology at Austin, were announced by the Texon-Group 1 companies, in a letter to the Houston office of NATIONAL PETROLEUM NEWS, as follows:

Feet	Degrees Fahr.
5700	122
6500	135
7000	152
8000	161
8300	170

According to C. E. Van Orstrand, in a press notice issued by the United States Geological Survey last spring, the highest observed temperature in a deep test on the Pacific coast was 210.3 degrees Fahr., recorded at 6500 feet in the No. 1 Johnson test drilled at Longmont, Calif.

The No. 1842 Ligonier test of the Peoples Natural Gas Co., about 35 miles east and eight miles south of Pittsburgh, Pa., showed a temperature of 158.2 degrees Fahr., at 6500 feet, as compared with 135 degrees at the same depth in the Texon-Group 1 well.

In the Lake test of the Hope Natural Gas Co., about six and a half miles southeast of Fairmont, Marion county, W. Va., the observed temperature at 7500 feet was 168.6 degrees Fahr., as compared with 161 degrees at 8000 feet in the Texon-Group 1 operation.

Various other readings shown in the United States Geological Survey press notice on deep wells of the country are given in an accompanying table.

Readings made at the Texon-Group 1 well show a change of 13 degrees temperature from 5700 feet to 6500 feet, or an average increase of approximately one degree for every 61 feet drilled. From 6500 feet downward there is a rapid increase, so that at 7000 feet the reading shows 152 degrees, Fahr., or an average increase of one degree for 30 feet of drilling.

At 8000 feet, the temperature recorded was 161 degrees Fahr., or 111 feet for average one degree change of temperature. An abnormal condition of some kind appears to be indicated if the observed temperatures are correctly shown between 7000 and 8000 feet. This discrepancy is all the more marked when considered in relation to an observed temperature of 170 degrees, Fahr., at 8300 feet, or an increase of one degree for every 33 feet drilled below 8000 feet.

No observations were taken at upper levels in the Texon-Group 1 well, but the rate of change between 5700-6500 feet (one degree for 61 feet drilled) checks with the experience of the hard mining industry. It has been broadly recognized in mining operations, which ordinarily do not extend below 5000 feet of depth, that temperatures increase one degree for every approximate 55-foot section of earth penetration.

The variation of west Texas temperatures at deep levels from those of the Appalachian region may reflect, in part, the difference between a major uplift area and an embayment where loosely consolidated deposits of relatively soft clays predominate.

Harder stratified and consolidated rocks of the Appalachian region would naturally influence temperature variations in comparison with the great thickness of loosely consolidated beds in the Permian salt basin territory.

Many scientists and engineers maintain that variances in temperature observations shown by deep wells in individual areas tend to prove a geological theory of probable future importance. The theory is that such temperature variations indicate trends of buried structure, or the presence of large underground folds that may or may not be mappable at the surface, generally not.

A confirmation of this idea has been found in temperature readings on wells known to be on and off structure. The rate of change of temperature increases more rapidly above and on a structure than off it.

The economic application of this principle would be chiefly in areas

Table 1—Data on Three Deep Wells at Ligonier, Pa.

	Temperature Fahrenheit		
	Well	Well	Well
Depth, Ft.	1842	1588	1699
100	50.7	49.9	50.7
500	55.8	55.9	56.1
1000	63.0	63.1	63.2
1500	70.6	71.0	71.1
2000	78.6	77.9	79.2
2500	85.9	86.1	86.1
3000	93.0	93.3	91.5
3500	100.8	100.9	98.4
4000	107.8	108.1	106.1
4500	117.2	116.4	115.2
5000	127.4	126.6	123.2
5500	137.8	137.8	132.1
6000	148.7	148.8	141.5
6500	158.2	.....	151.2
6750	166.1	.....	154.7

Table 2—Observed and Estimated Temperatures In Deep Wells. (After U. S. G.S.)

Well	Location	Depth	Observed Temp., Fahr.	Pounds Per Square Inch Pressure	Estimated Temp., at 10,000 ft.
Goff	Clarksburg, W. Va.	7310	159.3	3173	189.8
Lake	Fairmont, W. Va.	7500	168.6	3255	201.3
No. 1842	Ligonier, Pa.	6500	158.2	2821	212.5
Day	Gaines Jct., Pa.	5500	134.8	2387	202.9
Hughes 1	Lost Soldier, Wyo.	1925	144.2	835	537.1
Johnson 1	Longmont, Cal.	6500	210.3	2821	290.6
Bastanchury 5	Fullerton, Cal.	4270	154.5	1853	264.7
Henderson 1	Ozona, Texas	5500	151.4	2387	222.6
Boston Barnet 1	Holdenville, Okla.	5200	166.0	2257	261.6

where no key bed is available for surface geology or where there is no marked change in stratigraphy on which to correlate upper formations. Naturally, where key horizons are available structural conditions may be mapped more simply.

In his United States Geological Survey discussion of deep well temperatures, Mr. Van Orstrand referred at some length to tests tabulated herewith. The records of the Goff and Lake deep wells, both drilled by the Hope Natural Gas Co., he said, were among the first obtained at great depths.

The general trend of their temperature curves, he said, "shows a rather marked convexity toward the depth axis which . . . . . is characteristic of temperature distributions in deep sediments.

"In view of the absence of fluids in these wells below shallow depths, the increase in curvature with depth may possibly be a measure of the amount of moisture held in the pores of the rocks—the amount gradually diminishing, of course, with the depth.

"Other conclusions may be reached depending on our assumption as to the origin and maintenance of the earth's internal heat."

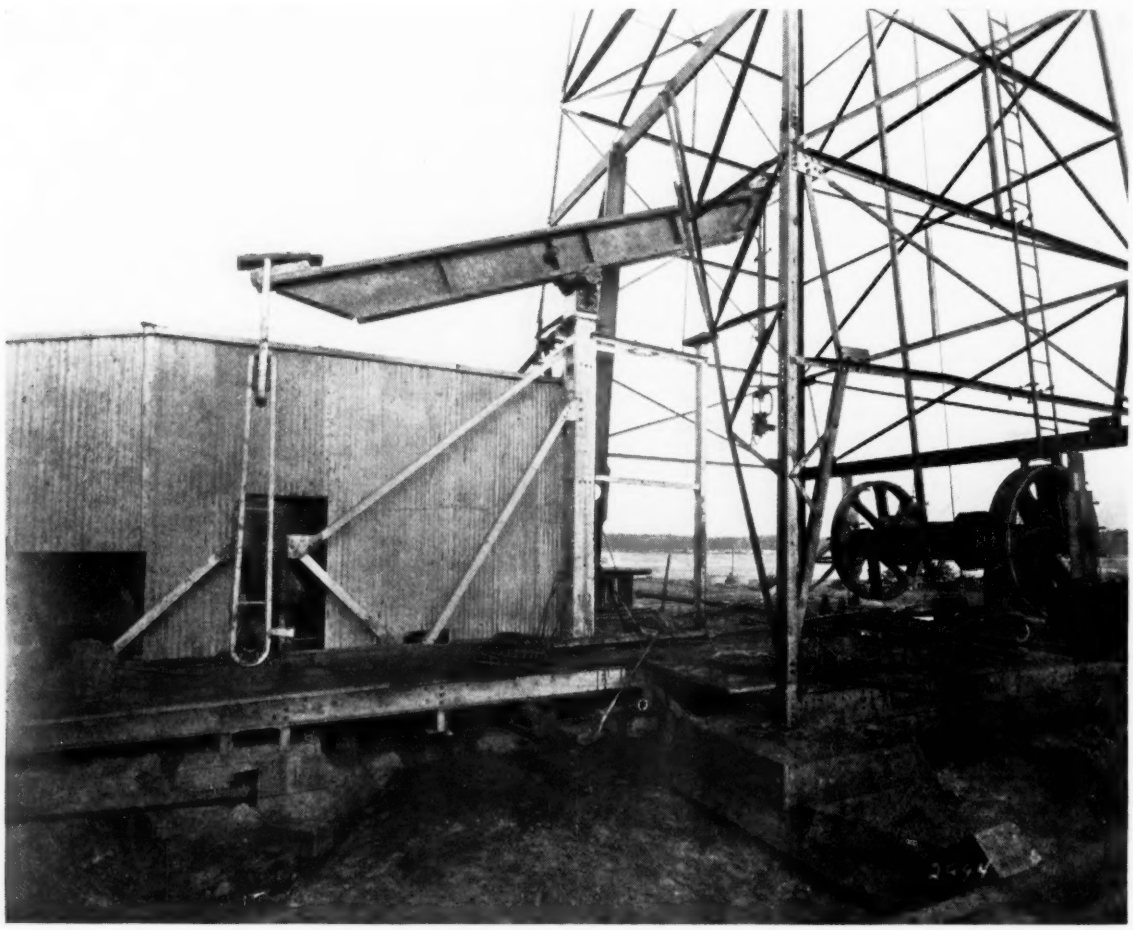
Temperatures shown in Table No. 1 on three deep tests at Ligonier, Pa., moved Mr. Van Orstrand to point out that comparisons of the figures in the second and third columns show the temperatures in wells No. 1842 and No. 1588 were practically identical; the temperatures at 6000 feet, for example, being 148.7 degrees Fahr., in No. 1842, and 148.8 degrees, Fahr., in No. 1588.

"In comparison with these values," he said, "the value 141.5 degrees Fahr., obtained at the same depth in No. 1699, may be significant in that no production was obtained in this well. The temperature differences make their appearance at a depth of 3000 feet and increase from that point quite uniformly with increasing depth."

Small quantities of gas were found in both the other wells mentioned, but none in the No. 1699, as set forth in Mr. Van Orstrand's quoted comment.

After stating that no temperature tests were made on the Miley-Athens No. 6 deep well in the Los Angeles Basin, Mr. Van Orstrand said that the Chanslor-Canfield Midway Oil Co. reported 223 degrees Fahr., at depth of 8046 feet in its No. 96 Olinda (California) well.

"From my extended series of observations in deep well No. 5 Bastanchury, near Fullerton, Calif.," he said, "I computed the value 227 Fahr., at the same depth. The two results tend



More and more the industry goes to an all-steel basis in the fields. Here is shown an International Derrick & Equipment Co. rig with steel sills under walk-way; steel bull wheel; steel walking beam and steel jack post

—Oil Conservation~Tank Preservation—

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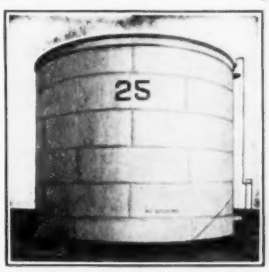

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to show that the temperature at the bottom of No. 96 Olinda is not abnormal for the average rate of temperature increase in No. 5 Bastanchury, namely, one degree Fahr. in 52.1 feet, is a value of rather frequent occurrence in the oil fields of California.

"A higher temperature has been reported from the Springleigh bore in the parish of Gowan, county of Mitchell, in the Blackall district of Australia, where a temperature of 230 degrees Fahr. was recorded at the bottom of a flowing well which had reached a depth of 5700 feet. The temperature of the flowing water at the top of the well was 176 degrees Fahr. This well ultimately reached a depth of 7009 feet and was lined from the top to the bottom with 5 7/32-inch casing."

After stating that a question of fundamental importance in any kind of mining operation is that of the temperature that may be encountered at great depth, Mr. Van Orstrand commented further:

"In view of the observations thus far made in deep wells, we can make fairly accurate prediction of the temperature that may be expected at deep levels in oil fields.

"Using all of the observations made in a particular well to the depths indicated in the following (Table No. 2), I have computed the temperatures that may be expected at depth of 10,000 feet.

"The fifth column contains the hydrostatic pressures at the base of the column of water whose height equals that of a given depth. On the same basis, the hydrostatic pressure at 10,000 feet is 4340 pounds per square inch.

"Our table reveals some interesting results. In the Appalachian oil fields, the temperature to be expected at 10,000 feet does not exceed the boiling point of water at sea level (212 degrees Fahr.).

"For certain areas in Texas, Oklahoma and California, the excess above the boiling point probably ranges from 10 to 50 degrees Fahr. At Longmont, Calif., the excess may amount to 80 degrees Fahr., while at Lost Soldier, Wyo., we have an estimated temperature of 537 degrees Fahr. at 10,000 feet, corresponding to an excess of 325 degrees Fahr. above the boiling point.

"The last value contains a large element of uncertainty, due to the fact that it is based on observations extending to the comparatively shallow depth of 1925 feet."

LOS ANGELES, Dec. 8.—J. C. Ballagh of Patterson-Ballagh Corp., Los Angeles, and Mrs. Ballagh left Los Angeles Nov. 9 on a tour of the American oil fields. The journey will take Mr. and Mrs. Ballagh as far east as New York and will extend over a month.

INDEX TO ARTICLES

Selected Bibliography on Petroleum Technology

Editor's Note—The brief abstracts of current literature printed below are so arranged that they may be cut apart and mounted on 3" x 5" library indexing cards. The indexing numbers assigned bring the cards into logical sequence in the files. The "Decimal Index of Petroleum Technology" gives the key to the articles. This book is published exclusively by NATIONAL PETROLEUM NEWS as a service to its readers. Price $1.00. Abstracts started April 4, 1928.

Haskell, R. M., **537.**

"Air-Pressure Recovery in the Eastern Fields"

A paper read before the Eastern Section of the American Petroleum Institute, Division of Development and Production Engineering, Bradford, Pa., May 17, 1928.

Printed in A.P.I. Development & Prod. Eng. Bull. 202; National Petroleum News, May 23, 1928, p.25; and Oil Field Engineering, July, 1928, p.32.

This paper presents the results of pressure restoration work in the Bradford Field of Pennsylvania, by the Associated Producers Co., which is now operating upwards of 600 wells under the influence of restored pressure. Compressed air has been chiefly used in this work, though natural gas would be preferable if it were available. Methods of operating gas engines on air-gas mixtures produced from the wells are described. Installation of the necessary compressor plants, pressure and gathering lines, and preparation of the intake wells, averaged $564 per producing well, or $86 per acre. Pressure restoration has been successful in increasing production, particularly in the more permeable sand areas. Individual well productions have been increased from 0.25-bbl to as much as 12-bbl per well per day under favorable circumstances. In the tighter sand areas, the results have been less profitable. Production in some areas continues to increase over a period of three years or more. In comparison with water flooding, air-driving costs approximately one-seventeenth as much as water flooding, but the latter method produces about five times as much oil. Operating costs for the two processes are about the same.

Application of the air-driving process often results in emulsification of oil with water which is also generally present in the sands. Trouble due to emulsification has been reduced by maintaining a layer of salt water in the producing wells, and by back-pressure control. Back-pressures as high as 80 pounds per square inch are maintained in some cases. Total operating costs are usually higher than normal, but the greater quantity of oil produced results in lower unit costs, sometimes only half the previous unit cost. Lifting expense is reduced by flowing wells at intervals with compressed air instead of plunger pumping.

Vance, H., **514.5**

"Development and Production Methods in West Texas"

A paper presented at the Colorado Springs meeting of the Division of Development and Production Engineering, American Petroleum Institute, June 15, 1928.

Printed in Oil Weekly, June 22,1928, p.34, and Oil & Gas Journal, June 21, 1928, p.34.

The author of this paper, a district production engineer in the employ of the Marland Oil Co., has drawn upon a wealth of practical experience in preparing this review of West Texas development and operating conditions and methods. A general description of the region is first given, with a key map showing the location of the various important West Texas fields. It is stated that the producing fields of this area represent the largest known reserve of oil in the United States, and that the area of some 33,000 square miles included within the region comprises the best prospective area in the U. S. at the present time.

The paper gives subsurface data, drilling methods, casing programmes, methods of completing wells, production methods, and oil and gas production records for four of the more important fields: the Crane-Upton field, the Yates field, the Hendrick field and the Chalk or Roberts field. Production in these fields is, for the most part, obtained from lime formations encountered at comparatively shallow depths, ranging from 900 to 3,000-feet. Both rotary and cable-tools are employed though the cable-tool system is generally preferred. High pressures have been encountered in several of the fields and most of the production is secured by natural flow methods. Where this fails, wells are pumped in multiple on powers, or on the beam. The gas-lift has also been used to a limited extent. The gas produced with the oil contains a high percentage of hydrogen sulphide and is highly corrosive and poisonous in some cases. Drilling and production costs are comparatively low, but the oil commands a low price because of its high sulfur content. Methods of stimulating production include shooting and frequent cleaning out of the wells. The author describes a novel method of cleaning out wells by circulating air and oil through two strings of tubing, which, it is said, has reduced the cost 65% and has greatly reduced the time in comparison with ordinary clean-out methods. (Cross-index under 422.5 and 111.34)

MacLean Houston **740.**

"Expensive Shutdowns Are Due Mostly to Carelessness"

National Petroleum News, Sept. 26, 1928, p. 83.

The author calls attention to the heavy losses that often result in refineries through neglecting to order spare parts needed, letting a still take longer than necessary to cool before sending men into it, lack of proper synchronization of the operation of earth burners to the cycles of the filters, and fires resulting from carelessness. In short, the general damage to the balance by careless slipshod procedure around a refinery.

For more Abstracts, see page 74

"Who is *that* man?"

"This is Mr. Robertson, Consulting Engineer of The Linde Air Products Company," said the Chief Engineer.

"When we found that our latest alloy required an entirely new procedure for welding, we called the Linde Company for help. They submitted the problem to their Research Laboratories, who have worked out a way to weld this new alloy successfully.

"Mr. Robertson has furnished us with what they call a Procedure Control—detailed instructions for doing the work. These are specimen welds made by their new method. We've just finished testing these coupons for tensile strength. Every one broke outside the weld at a figure far beyond our maximum requirements."

HUNDREDS of practical and theoretical problems involving the Oxy-Acetylene process are constantly being studied in the Union Carbide and Carbon Research Laboratories. The results of these studies as well as help on any special problems that may come up are available to Linde customers through Linde Process Service. Linde Process Service is one of the reasons that Linde Oxygen is the leader in its field.

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LINDE OXYGEN

Metal Congress Will Hear Oil Speakers

LOS ANGELES, Dec. 6.—The oil industry will be represented in the Western States Metal and Machinery Exposition and Western Metal Congress which will be held in the Shrine Civic Auditorium, Los Angeles, Jan. 14 to 18, according to W. H. Eisenman, Cleveland, O., secretary of the American Society for Steel Treating.

Members of the California division of the American Petroleum Institute and of the Chamber of Mines and Oils will attend the congress and take part in the program.

A. C. Rubel, Union Oil Co. of California, Los Angeles, and district chairman of the California division of development and production engineering of the American Petroleum Institute, has announced that F. W. Lake, of the Union company, will read a paper on "Sucker Rod Strains and Stresses." Ben Stroud, National Tube Co., will speak on "Drill Pipe Failures." K. V. King, of the Standard Oil Co. of California, San Francisco, will present a paper on "Casing Failures" and C. J. Coberly, of Kobe, Inc., on "Welding and High Pressure Gas Distribution."

Oil equipment will be displayed by the Axelson Machine Co., Ducommon Corp., Fusion Welding Corp., Herberts Machinery & Supply Co., E. F. Houghton & Co., Hughes Tool Co., Standard Oil Co., and Smith-Booth-Usher and Doheny Stone Co.

A visit to oil fields of southern California and an inspection trip to some of the oil equipment manufacturing plants, is being planned for the visitors by W. W. Farrar, of the E. F. Houghton Co.

Actual operation of some of the oil machinery at the convention is promised. Other organizations taking part in the program of the congress are the Pacific Coast Gas Association, the American Institute of Mining and Metallurgical Engineers, and the American Welding Society.

Edward Higgins, managing director of the Chamber of Mines and Oils, and H. W. Westsmith, of the same association, have charge of the oil and mining programs.

A. E. DeBurn, Pacific Pipe & Supply Co., and J. J. Bruton, Oxweld Acetylene Co., Los Angeles, are planning the representation of the American Welding Society on the program.

LOS ANGELES, Dec. 8.—J. W. Cook, formerly with Craig Oil Tool Co., Long Beach, and now head of the heat treating department of Byron-Jackson, Inc., has returned to Los Angeles after an extensive tour of the Eastern manufacturing districts. While on his trip, Mr. Cook attended the National Metals Exposition.

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L. C. Jamieson **728.**

"Low Humidity Hastens Bright Stock Settling"

National Petroleum News, Sept. 26, 1928, pp. 89-91.

For cold settling, a medium sized tank, say 25 by 30 feet with 3000 barrels capacity seems to give the best results both from the standpoint of chilling time and settling time. Three cardinal principles to remember in getting ready to start a settler. First, the solution should be free from moisture, second and perhaps most important, to have it thoroughly mixed and third to bring the contents of the settler between 90 and 100 degrees F. to drop out the moisture that may be left in it.

Records kept at the plant of the Viking Oil Corp. at Warren, Pa., showed the following facts: Per barrel of solution, assuming that we chill from about 95 degrees F. down to 10 degrees F., gravities of solution compared to chilling time out of 160 settlers check up as follows: From 43 to 43.9 gravity, 37.9 hours per 1000 barrels; 44 to 44.9 gravity, 36.3 hours per 1000 barrels; 45 gravity upward, 38.2 hours per 1000 barrels.

Relative humidity: Out of 143 settlers, seven settled out when relative humidity was apparently going up; 136 settled out after one drop in humidity; 14 of these 136 might be considered as having settled out when the humidity stayed stationary. Barometer: Out of 144 settlers settling took place when barometer was going up, 94 times and down 50 times. Barometer up, humidity down, 90 settlers out of 143; barometer up, humidity up, 3 out of 143; barometer down, humidity down, 46 out of 143; barometer down, humidity up, 4 out of 143. Barometer conditions as such have no effect on a settling tank. A sudden drop of over 5 points in relative humidity seems to make a settler drop out in some 6 to 18 hours thereafter which brings up the question, "Why not make your own humidity inside a settling tank? This is a problem on which we are now at work.

C. R. Johnson **781.1**

"Carbon Black"

Industrial and Engineering Chemistry, September, 1928, pp. 904-908.

"The rates of evolution of gas from carbon black with variation of time temperature and pressure have been determined.

"Complete analyses have been made of five types of carbon black which involve an organic combustion of the original sample, an organic combustion of the sample after the gases have been removed, a determination of the loss in weight represented by the gases removed and finally a complete accounting or balance of the carbon in the steps considered. In an attempt to supply some of the missing information not revealed by the foregoing, some special gas analyses under varying conditions were made.

"The relationship between the amount of volatile matter evolved from carbon blacks and the properties imparted to vulcanized rubber when compounded with these blacks has been studied."

J. C. Chatfield **721.**

"Quick Action Reduces Loss and Coking when Pipe Still Tube Fails"

National Petroleum News, Oct. 3, 1928, pp. 61-63.

Loss of oil and damage from bursting tubes in pipe still have been minimized by system in use at Barnsdall refineries. Coking of undamaged tubes during a fire has been eliminated with result that a pipe still can be gotten back on stream with less lost time and labor cost.

The system consists of promptly isolating the tube still from its crude supply and tower systems and purging the tubes of oil under steam pressure. The time required for this is exactly 3½ minutes from the instant it is discovered that a tube has blown out. When evidence of a ruptured tube appears, the stillman instantly shuts down his crude charging pump. The thermostatic control on the transfer line from still to towers meanwhile has shut off the main fires in the furnace, leaving only a ¾-inch pilot light burning. Stillman then shuts off the pilot light and floods the furnace and space around the tube banks with live steam. He then closed a valve in the transfer line to prevent any vapors from backing into the still from the tower system. The operator then opens a valve between the coils in the furnace and a dump line which leads into an old shell still nearby and also cuts steam into this line. The contents of the tubes is quickly flushed into the old still which also may be flooded with steam. This old still has a vent pipe from the dome which is always open so that no back pressure will develop when the pipe still is being dumped.

M. Garcia **749.**

"Heat Transfer in Oils Flowing Through Pipes"

Industrial and Engineering Chemistry, September, 1928, pp. 889-891.

"The logarithmic mean temperature difference equation is based on assumptions which are wholly unjustified when dealing with oils and may give misleading results in heat transfer calculations. Differential equations have been derived, taking into account the change in physical properties of the liquid with temperature, and the results obtained by integration of these equations differ considerably from those given by the logarithmic mean formula and show a different law of temperature distribution along the exchanger.

"Graphical methods are given for the calculation of mean liquid temperatures and mean temperature differences, to be used in the correlation of experimental data or the design of exchangers for heavy viscous oils involving large temperature ranges."

Seminole Umpire Reviews Control Work Done by Operators in Two Years

CHICAGO, Dec. 8

SOME of the accomplishments of Oklahoma operators in the Seminole area in delaying unwanted production were described on Wednesday by Ray M. Collins, umpire of the Seminole district. Mr. Collins, who has been practically continuously employed by the operators since late in 1926, set up the following phases of the Oklahoma machinery:

1—An advisory committee, consisting of four representatives of the larger companies and three representatives of the producers not having affiliations with pipe lines or refineries.

2—A legal committee of five attorneys, elected by the producers, who advise with the umpire, the advisory committee and the corporation commission.

3—An umpire appointed by the producers and the corporation commission.

4—The corporation commission of Oklahoma and the attorney general.

Briefly, the several methods that have been employed by the producers to restrain production were set forth by Mr. Collins as follows:

The pinching in of wildcat wells which open new pools to 100 barrels daily or, where possible, shutting them in entirely.

Drilling of "key wells," by several operators. One drills the test and others owning acreage that would be proved agree to help pay the cost of the well if it is a failure.

The operator who drills the well, in return for the financial support, agrees to hold his well, if a producer, to 50 or 100 barrels per day until the offset wells reach the sand. He thus waives his discovery advantage, insistence on which in the past has caused the intense competition to develop all the acreage in a new pool.

Key wells are drilled on leases soon to expire. It enables operators to control the time of bringing a new pool onto production and saves much money by reducing the number of unnecessary wells and dry holes.

Proration—a method which has been resorted to several times in Oklahoma.

Modification of the well spacing program in excessively deep territory. Near Oklahoma City the Indian Territory Illuminating Oil Co. and others are working on a plan of development of one well to 40 acres, if that territory proves productive.

Utilizing of acreage. Operators agree to hold and operate their leases in undivided interests, each assigning to the other a fractional part of his lease on an agreed upon plan. This method is used in advance of testing and when properties have potentially the same value per acre. It has been put into operation in Oklahoma and Kansas in several instances.

Difficulties in carrying out the program were constantly met with and not always disposed of successfully. Said Mr. Collins:

"The movement for the conservation of oil and gas was endorsed and heartily supported by a majority of the producers, but as in all movements affecting many different companies and individuals, the actual work and responsibility was borne by a few. Consequently a great deal of the burden of evolving plans and obtaining the approval of all the parties fell upon the shoulders of the leaders in the industry, and at times they were accused, unjustly, of favoring their own companies' needs rather than that of the industry as a whole.

"This feeling of distrust worked a hardship on these men who gave a great deal of time and thought to the ideals of stabilization of the industry and in every case where their companies' interests were involved, they would not agree to any plan which might be construed as being favorable to them, and in many instances, they sacrificed their rights in order to hold the situation.

"A great deal of this distrust is due to the fact that the larger companies have interests in production, pipe lines, refineries and sales departments all over the United States and South America; whereas, a great many of the smaller companies have their entire interests in one state or one locality. The larger companies have pipe line systems running to nearly every field in Oklahoma, so that they are able to draw on all pools for their needs, while the smaller companies depend upon certain pools for their requirements, and there comes a time when these pools will not supply their demands and they have to seek other places for their supply.

"Therefore, we find some companies putting oil into storage at a big expense and other companies crying for oil and insisting upon drilling at a time when the industry as a whole has more than sufficient oil to supply the entire country. Then there is the natural expansion of the business, new requirements to be met, causing a drilling program for one company on a much larger scale than that of another.

"New companies are organized and they have to get production in order to make a showing. Others find their production declining to a point where the income barely pays expenses and when they find a lease that will make a good profit they, too, want the privilege of unrestricted drilling and production. The fear of the Sherman anti-trust act kept a few of the companies from entering into any agreements that had for its purpose the control of production. However, they did abide by any orders of the commission.

"Others thought that we should not appeal to the corporation commission for orders governing the actions of the producers as they felt that we were drifting towards government control, and their slogan was, 'Keep the oil business out of politics.'

"Small units often caused the drilling of extra wells when a new field was opened to drilling.

"One of the great stumbling blocks in holding back the opening of new pools was due to contract or lease obligations which required the drilling of a well within a specified time and a failure to comply with such terms meant the cancellation of the lease.

"The differences of opinions among the attorneys on such questions as the powers of the corporation commission, the rights of the royalty owners to force the drilling of a well offsetting a pinched in well, or to compel the producer owning the shut in well to open it to full production, are continually coming before the legal committee. These questions involving the rights of the lessees and lessors are serious ones, as in many cases cancellation and damage suits are threatened, and some companies rather than fight a suit, the loss of which might amount to around one million dollars, prefer to violate the orders of the corporation commission."

In spite of difficulties, and failure to accomplish all the things attempted in Oklahoma, Mr. Collins pointed to these results:

Controlling of production by restricting of shooting, drilling of wells, and proration effected a levelling of the production curve during the last half of 1927 and all of 1928 to a point where the transportation and marketing facilities for crude oil were fairly well balanced. Without this control, a peak production of better than 600,000 barrels per day for the

Foamite Generators killed this big fire easily

The tank was 92 feet in diameter. The oil used was high gravity crude. It was fired in a twenty-mile wind. After ten minutes of free burning the inside of the tank was a volcano of flame and smoke, the heat terrific.

And, to greatly intensify the severity of the conditions, the *Firefoam* had to drop over twenty feet through this inferno before reaching the level of the burning oil.

But in twelve minutes the fire was under control and in nine more it was out.

Later, the oil was again fired and allowed to burn for seventeen minutes. Again, a terrifically hot fire. But, it was under control in four and one-half minutes and completely out in ten more minutes.

Two Model 30 FOAMITE Generators were used in these remarkable tests. Run in conjunction with a large oil company, these tests proved conclusively the efficiency of FOAMITE Generators to extinguish large oil fires.

If you have smaller tanks one Model 30, or a Model 15 or 25 may be sufficient. Why not have an American-LaFrance and Foamite representative study the conditions on your property? There are representatives at points convenient to all principal oil producing and refining centers. American-LaFrance and Foamite Corporation, Engineers and Manufacturers, Dep't **E21**, Elmira, N. Y.

AMERICAN-LAFRANCE & FOAMITE PROTECTION

A Complete Engineering Service for Extinguishing Fires

Greater Seminole Area would have been attained in 1927, and between 50,000,000 and 60,000,000 barrels of additional oil placed in storage during 1927 and 1928. The price of crude oil would have been reduced to a figure where thousands of small wells could not have made expenses, thus causing a great many producers who would not have had the finances to weather the storm to abandon many small properties. Large quantities of crude oil would have been used for fuel oil. Gasoline would have been manufactured by the "straight run process," rather than by the "cracking process." Millions of dollars would have been lost by the industry, while the public would have benefited to a very small extent during the overproduction period. If we are to think of the future, to protect our natural resources for future generations, we must control our production of today and tomorrow.

Pictured above is Ray Theis, salesman-pilot of the Spartan Aircraft Co., of Tulsa, and the Skelly Oil Co., plane, in which Mr. Theis and two other Skelly employes recently made a fast trip from Tulsa to Kansas City.

Paul Bossemeyer, of Eldorado, Kansas, district manager of sales in Kansas and Missouri, and George Byrne, of Tulsa, connected with the Skelly natural gasoline department, were the other two occupants of the plane.

The three men received an invitation from the Kansas City Board of Trade, to a dinner complimentary to persons engaged in the aviation industry, the invitation coming late in the afternoon of Nov. 13, the same day the dinner was to be held. Both Mr. Theis and Mr. Bossemeyer boarded the plane at El Dorado, "gunned her" to Tulsa, and picked up Mr. Byrne. One hour and forty minutes after they had taken off from Tulsa, they were at Kansas City, averaging 130 miles per hour for the trip.

J. F. Nagle, Spartan sales manager comments: "That's flying!"

A TANK IS NO BETTER THAN ITS FITTINGS

THE sense of security in well-built tanks with steel roofs is misleading —unless the openings are adequately protected.

The fittings are the least expensive part of the tankage yet on them depends whether the oil is to be safe from fire and evaporation. This is why leaders in this industry the world over are specifying Oceco no matter who builds the tanks.

Don't allow any weak links. Insist upon Oceco.

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Tulsa Trust Bldg., Tulsa, Okla.
Neilan, Schumacher & Co., Los Angeles, Cal.

"OCECO"
EQUIPMENT WITH A SERVICE RECORD

Heavy Toll Taken by Evaporation, Some Ways to Cut It Down

By E. C. Herthel* and William Mendius*

Read at American Petroleum Institute Meeting, Chicago, Dec. 3-6, 1928

Average loss of gasoline from 55,000-barrel storage tanks of standard steel deck construction in spring and early summer in the Gulf Coast district is 7 barrels a day, or 4.7 per cent per year on the volume stored.

The higher the gravity of the gasoline stored the more rapid the evaporation.

Leaving open even a 10-inch gauge hole in the tank is reflected immediately in higher losses.

A gauge hatch left uncovered about doubles the evaporation loss rate.

This evaporation loss can be reduced 49 per cent by the use of a vent valve for the maintenance of 0.9 inches of water pressure and vacuum on the tank.

These are outstanding points contained in the accompanying paper covering experiments carried out by the authors.

THIS paper gives the results of test work on Mid-Continent crude and products carried on in the Gulf coast district on a group of tanks used as working storage for determination of evaporation losses through measurement of tank breathe.

The results include the effect on tank breathing of such factors as grade of oil, tank void, pressure, insulated roof, water spray roof, climatic conditions, and conditions of standing vs. pumping-in, encountered or introduced in tests conducted. Fig. 1 shows the setup used.

A preliminary picture of losses which may be expected is given in Tables 1 and 2, which shows the results of tests conducted on a 55,000-barrel full Mid-Continent gasoline storage in the north central district, the loss being determined by measurement of oil volumes, using all precautions for accuracy known. The tankage was standard steel deck construction, as described later.

TABLE 1

Evaporation Losses of Full 55,000-Barrel Gasoline Storage Tanks Determined by Oil Volume Measurements

Tank No.	Duration (days)	North Central District —Gasoline— Grav. °A.P.I.	Temp. °Fahr.	Loss bbl/day
1926—Early summer				
1	41	58.0	41	4.07
2	69	58.0	48	6.04
3	24	64.7	39	12.50
4	62	64.3	47	8.90
5*	90	57.8	50	9.56
6	85	57.8	50	8.06
7**	63	57.8	57	18.94
8	63	57.8	57	11.63
1927—Spring				
3	46	61.5	42	7.45
4	40	61.7	48	5.84
5*	18	63.6	38	12.30
7	88	62.6	48	3.81
8	81	60.6	47	5.32

Note: *10-inch gauge hole left uncovered.
**Gauge hatch left open.

Results of Table 1 may be summarized as follows:

1. Additional openings on top of tanks increase the evaporation loss;

2. Gasoline of a higher gravity evaporates at a faster rate than does lower gravity gasoline, the gasoline temperature being the same;

3. With a like grade of gasoline, the higher the temperature of the gasoline, the greater the evaporation;

4. An average rate of evaporation for standard full 55,000-barrel gasoline storage as indicated by these tests amounts to 7 barrels per day or 4.7 per cent on volume stored per year.

The period of test, in the spring and early summer, is representative of average yearly temperature conditions; however, it is expected that mid-summer conditions will greatly overbalance winter conditions, and possibly increase the above average loss about ½ per cent.

The results of Table 2 check the conclusions on Table 1 with regard to higher gravity gasoline evaporating faster, and also show the reduction of 49 per cent in evaporation loss by the use of a vent valve for maintenance of 0.09 inches of water pressure and vacuum on tank.

The chief interest in making the tests reported in this paper was in determining rates, quantities and qualities of gases available from tankage under various conditions, to be used in proper design of equipment for recovery of such losses as indicated above.

The method of measurement used

*Sinclair Refining Co.

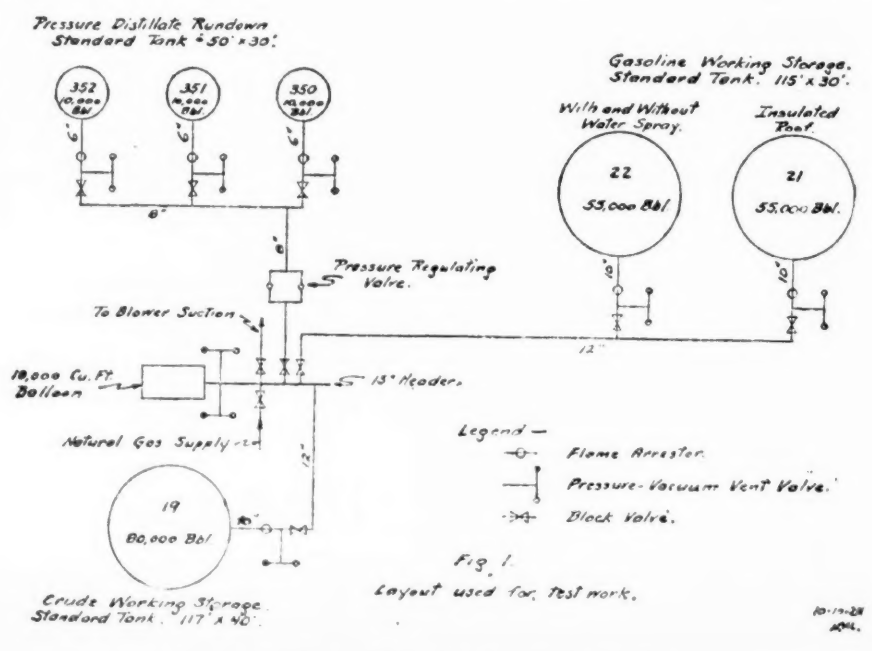


Fig. 1. Layout used for test work.

Fig. 1—Layout Used for Test Work

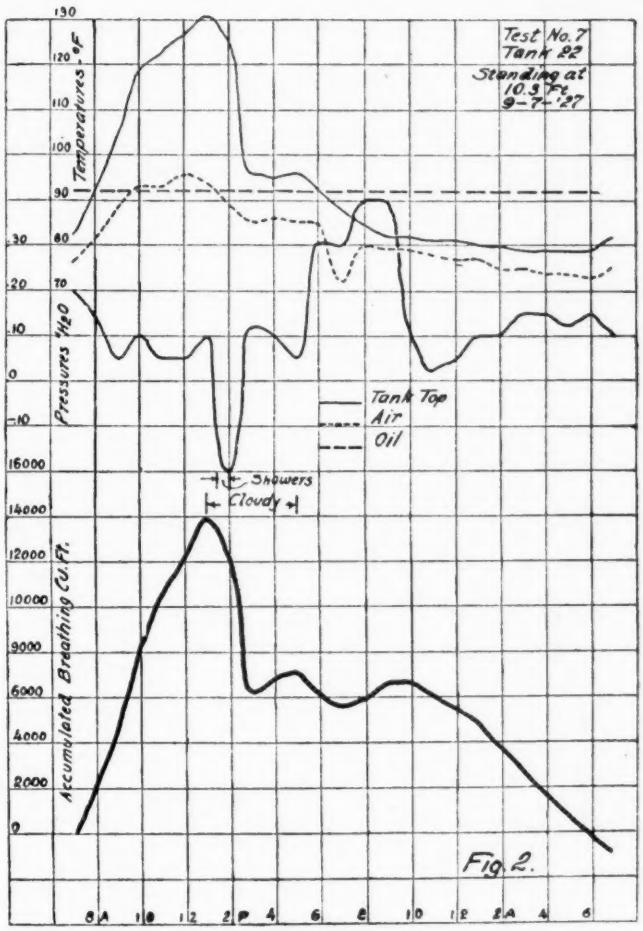


FIGURE 2

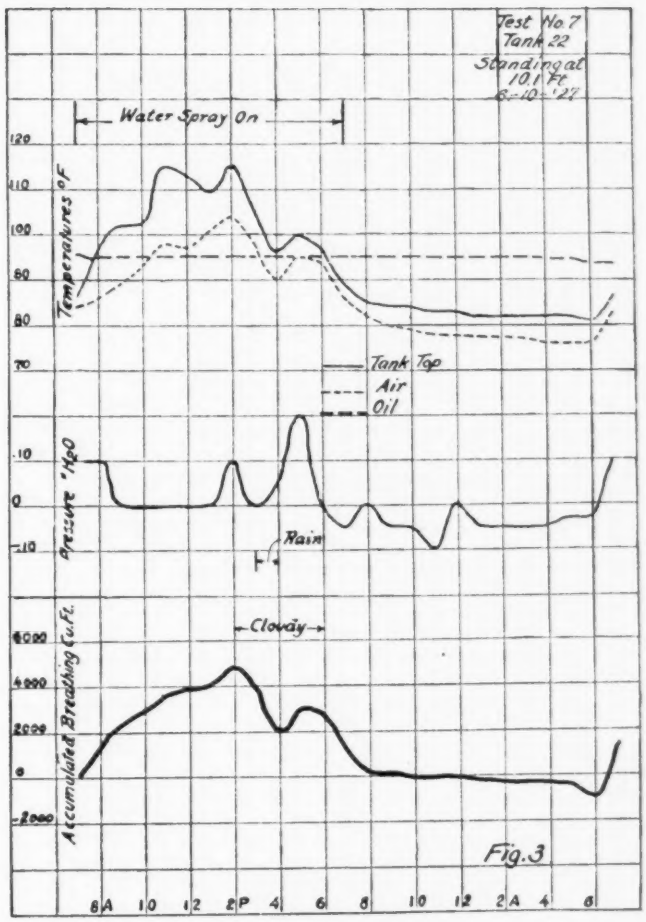


FIGURE 3

served the purpose of determining volumes and other characteristics of gas to be handled but may be questioned from the standpoint of interpretation of actual liquid losses. The breathing volume measurements obtained are considered reasonably accurate, due to use of a balloon for major volume measurements.

Corrections of such measurements were made for balloon leakage determined by blank tests on the balloon and also for tank roof leakage. Roof leakage was determined by an approximate blank test upon tankage introducing air to maintain constant pressure within the tank. The test for roof leakage was made by orifice measurement of air supply to the tank during a period at night when breathing changes were minimum, with pressures maintained on the tank of ¼-inch of water, showing 189 cubic feet leakage per hour; ½-inch of water showing 301 cubic feet leakage per hour; and 1 inch of water showing 637 cubic feet leakage per hour. The tanks tested were of entire steel construction, riveted and caulked, equipped with gasketed manholes and gauge hatches and one vent line, either from center or side of roof.

To be representative of working tank gauges the oil level used in most of the tests reported was arrived at by using the yearly average of daily 7 a. m. gauges on the tank and stock tested. There are other tests made at full and partially full tank gauges. The tests were carried on primarily in the late summer and fall and are not representative of year-round conditions.

Figs. 2, 3, 4 and 5 show pertinent data taken and their range and effect on rate of breathe on 55,000-barrel gasoline tankage. Fig. 2 shows normal conditions on a partially filled tank. Fig. 3 shows effect of addition of water spray to a partially filled tank. Fig. 4 shows effect of insulated roof on a partially filled tank. Fig. 5 shows effect of water spray or insulated roof on a tank filled to one-foot outage. Table 3 is also given, tabulating conditions of Fig. 2, 3, 4 and 5.

TABLE 2

Comparison of Losses Obtained on Full 55,000-Barrel Gasoline Storage Tanks—One Equipped with Special Vent Valve and the Other with Standard Vent

North Central District

Tank vent	A Vent valve	B Standard	Loss ratio A÷B
Gravity of gasoline....	62.6	60.6	
Period before vent valve installation—			
Duration, days	25	25	
Oil temperature....	41°	41°	
Loss, bbl./day.....	6.16	5.43	1.16
Period after vent valve installation—			
Duration, days	33	35	
Oil temperature....	54°	54°	
Loss, bbl./day.....	3.45	5.87	0.59

The data in this table and in these figures show the following:

(1) The effectiveness of an insulated roof as compared to water spray in reducing breathing on full tankage. In both cases the exhalation is comparatively small.

(2) For partially filled tankage, the breathing is large, but an insulated roof is not as effective as water spray in reducing breathing, apparently because the water spray keeps cool both roof and sides of tank.

(3) Exhalation is major after sunrise, the cool of late afternoon causing inhalation. Occurrence of clouds or rain, even when occurring through major exhalation period, may cause a sudden inhalation.

It has been common opinion that breathing is proportional to tank void. The tests made disproved this, and also indicated that evaporation with partially filled tanks is not much greater than with full tanks on the same stock, other conditions being similar. A partially filled tank of 225,000 cubic feet void volume exhaled 13,800 cubic feet with an attendant atmospheric temperature rise of 29 degrees Fahr. A full tank with 35,000 cubic feet void volume exhaled 4600 cubic feet under the same atmospheric change. The exhalation for the partially full tank amount to 2.12 cubic feet per degree temperature

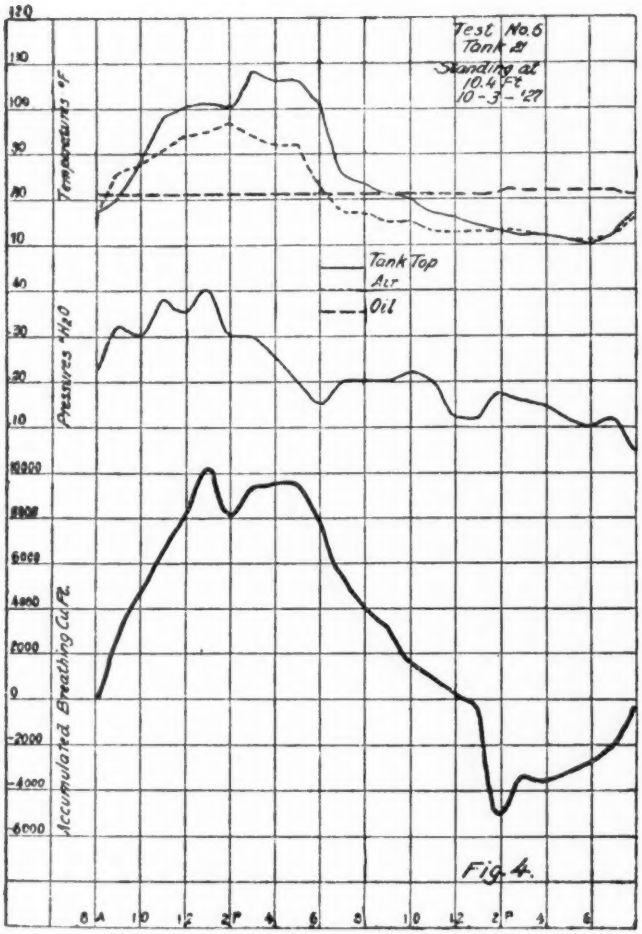


FIGURE 4

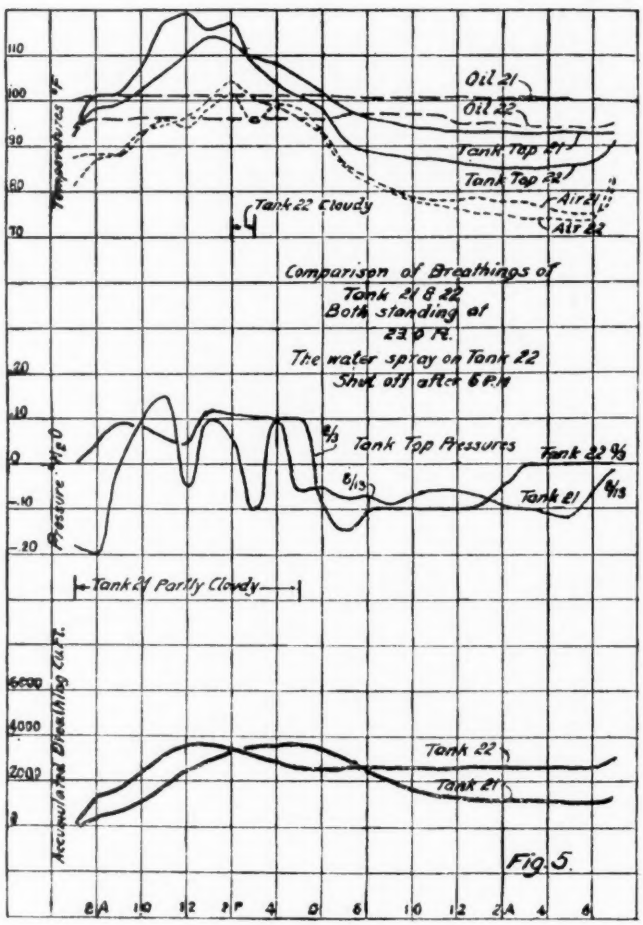


FIGURE 5

change per thousand cubic feet of void volume, and for the full tank 4.54. Thermal exhalation based on atmospheric temperature change is calculated to be 1.92. Exhalation on a tank is made up of thermal expansion of gases in void called "thermal breathing" plus vaporized gasoline from evaporation, herein called "vapor pressure breathing."

The increased unit exhalation from full tank is composed of both an increased thermal breathing and increased vapor pressure breathing, due to the greater increase in temperature rise of tank void and oil surface for a full tank. In further support of this position, calculated gasoline losses on partially filled tankage in the Gulf coast district show from 4 to 6 barrels per day, when tankage is under some pressure, as compared to full tankage results in the north central district of 3.6 barrels per day loss when tankage is also under some pressure, and 7 barrels per day loss at atmospheric pressure.

TABLE 3

Standing Breathing—Comparative Data

Tank	22	22 Water	21	21	22 Water
Condition	Std.	Spray	Insul.	Insul.	Spray
Capacity	55,000	55,000	55,000	55,000	55,000
Gasoline					
Gauge	10'4"	10'1¼"	10'4¾"	29'0"	29'0"
Vol., bbl.	18,952	18,494	19,073	53,206	53,610
Grav. ° API.	59.6	59.6	59.7	59.5	59.5
I.B.P. ° F.	106	100	104	105	100
Exhaled					
Hours	11	9	13	10	6
Vol., cu. ft.	15,600	8,000	16,300	3,600	4,100
Inhaled					
Hours	13	15	11	14	5
Vol., cu. ft.	16,500	6,500	16,500	2,200	1,000
Temperatures:					
Top of Tank					
Maximum ° F.	131	115	108	114	119
Minimum ° F.	79	81	70	93	85
Diff. ° F.	52	34	38	21	34
Average ° F.	93	93	85	99	96
Air					
Maximum ° F.	96	104	97	104	101
Minimum ° F.	72	76	71	75	73
Diff. ° F.	24	28	26	29	28
Average ° F.	82	87	81	86	86
Oil ° F.	92	95	82	101	96
Pressure, Avg. Tank Inches, water	.13	.0	.21	—.02	—.03

An example of derivation of calculated gasoline loss from breathing measurements is as follows: With average daily gross exhalation determined as 16,000 cubic feet and gasoline content of such exhalation determined to be 16.5 gallons per million "by absorption train" as described later under gas characteristics, the liquid loss is 6.3 barrels per day.

"Pumping-in" breathing, or the exhalation while pumping oil into a tank, is another misunderstood condition, the common interpretation being that this breathing is equivalent to the oil displacement and represents a negligible loss. Tests made on "pumping-in" breathing for gasoline and crude as shown in Table 4 developed this breathing to be an average value of 160 per cent of oil displacement.

"Pumping-in" breathing for gasoline tank car loading given in the same table also checks this. "Pumping-in" breathings were greater than balloon capacity. However, the exhalation was delivered to balloon, the excess volume being then released through an orifice

TABLE 4

"Pumping-In" Breathing

Tank Stock	19 Crude		21 Gasoline			22 Gasoline			Tank Car Loading Gasoline		
Total Breathing	Displ.	Ratio	Total Breathing	Displ.	Ratio	Total Breathing	Displ.	Ratio	Total Breathing	Displ.	Ratio
89,000	76,500	1.16	144,000	75,200	1.91	78,100	43,100	1.82	2,080	1,366	1.52
109,000	57,600	1.89	26,000	21,100	1.23	157,500	109,000	1.44	2,258	1,083	2.08
162,900	65,400	2.49	100,500	60,700	1.65	132,000	80,900	1.63	1,809	1,097	1.65
82,900	44,400	1.87	122,200	107,100	1.14	43,600	23,100	1.89	2,372	1,371	1.73
81,400	65,400	1.25	162,100	114,200	1.42	80,800	38,500	2.10	2,420	1,369	1.77
81,100	62,100	1.31	77,000	45,200	1.71	105,400	47,900	2.20	1,891	1,366	1.39
			199,300	103,100	1.93	135,000	61,300	2.20	2,445	1,368	1.79
						61,000	44,200	1.38	2,171	1,232	1.76
						87,800	71,000	1.24	1,362	1,093	1.25
						139,200	108,300	1.29			
						134,800	66,700	2.02			
						67,200	41,000	1.64			
						105,200	67,900	1.55			
						66,300	50,900	1.30			
Average		1.66			1.57			1.69			1.66

meter. All fluctuations in gas flow were taken up by balloon, enabling meter to handle a steady flow and thereby insuring greater accuracy of orifice measurements. Tank car loading breathing was also measured by orifice meter.

An effort was made to ascertain the effect of "pumping-in" rate upon this breathing without results. The breathing varies from 114-249 per cent of oil displacement, this variation apparently being caused by change of climatic conditions during "pumping-in" period.

The "pumping-in" breathing in excess of the actual displacement is built up of a combination of normal thermal breathing and vapor pressure breathing plus an additional vapor pressure breathing due to turbulence. On the basis of 160 per cent breathing, oil volume loss for each transfer is calculated to be 0.27 per cent.

No standing tests were made upon crude, since standing storage was not available. The only comparison of crude breathing with gasoline breathing is evident in the "pumping-in" breathe. There appears to be no difference in volume, but there is a difference in the characteristics and gasoline content of breathing as is evident in the gas analysis discussed later.

Table 5 gives data on the "pumping-in" tests on pressure distillate. Such storage tends to show slightly greater breathing on "pumping-in" due to the presence of fixed gas in distillate. Furthermore, the effect of pressure on tankage reducing breathing is evident in this data.

Standing breathing tests on pressure distillate tankage showed practically identical with that of gasoline tankage breathing—the breathing for given oil levels being proportional to surface exposed. Exhalation volumes of 1100 cubic feet and 6800 cubic feet per day were measured for pressure distillate and gasoline storage, respectively. These were obtained under very similar atmospheric conditions, with average temperature of 52 degrees Fahr., and 21 degrees Fahr. change in temperature. Both tanks were of the same height and were one-third full. Ratio of tank diameters is 5.3 to 1, while ratio of exhale is 6.2 to 1.

The results obtained on gas characteristic determinations are presented in Table 6. These give variations of properties for the range of temperature conditions occurring during test work. Two gasoline contents are given. The first one, entitled "by train," is determined by absorption train practice and is used in connection with exhale volumes to determine oil volume loss by evaporation.

The second value, entitled "by distillation," is determined by operation of absorption train with subsequent distillation of absorption oil for gasoline recovery. This value is used in the calculation of recoverable gasoline possible from the gas. The effect of temperature of oil and air on the characteristics of breathing from crude

TABLE 5

"Pumping-In" Breathing—Effect of Pressure on Pressure Distillate

Tank Stock	350 Pressure Distillate				350 Pressure Distillate			
	Tank Press. In. Water	Total Breathing Cu. Ft.	Displ. Cu. Ft.	Ratio	Tank Press. In. Water	Total Breathing Cu. Ft.	Displ. Cu. Ft.	Ratio
	0.08	27,840	16,480	1.69	0.48	15,910	12,740	1.25
	.16	31,680	14,270	2.22	.43	12,150	11,700	1.04
	.13	33,250	16,200	2.05	.28	13,950	13,530	1.03
	.15	34,280	13,920	2.46	.31	16,850	11,510	1.46
	.10	21,200	12,500	1.69				
Average	0.12			2.02	0.38			1.20

TABLE 6

Gas Characteristics—Gulf Coast District

			Gas Characteristics						
			Temperature					Gasoline Content Train-Distillation	
Stock	Inhaled from	Tank Press. In. H_2O	Oil ° F.	Air ° F.	Air %	Sp. Gr. Air=1	Ht. v. al. B.t.u./cu. ft.	G.P.M.	G.P.M.
Crude	Air	.....	80	80	67.0	1.20	.....	7.0	2.0
Crude	Air	.....	75	75	77.0	1.10	520	6.5	1.8
Gasoline	Air	.....	60	60	70.0	1.30	1050	10.0	5.0
Gasoline	Air	.....	85	85	50.0	1.50	1800	16.5	9.0
Pressure Distillate	Air	0.04"	55	55	55.0	1.27	1175	8.0	3.0
Distillate	Balloon	0.10"	65	65	27.0	1.35	.....	7.2	2.6
Distillate	Balloon	0.34"	75	60	23.0	1.22	.....	6.7	2.3

and gasoline storage is shown. The effect of tank pressure on the characteristics of pressure distillate gas is indicated.

For the purpose of illustrating the practical importance of evaporation losses, the results already presented in this report are used to determine possible gasoline recovery or gross heat value available from crude and light oil tankage in a hypothetical 10,000-barrel refinery. The refinery is assumed to have two 55,000-barrel crude tanks and three 55,000-barrel gasoline storage tanks. It also has sufficient light oil working tankage to handle 35 per cent gasoline topped from crude and 30 per cent of cracked gasoline, based on crude. The cracked gasoline is refined by rerun of treated pressure distillate. Both gasolines are sweetened. The calculated daily values are:

(1) Volume of exhaled gases..... 500,000 cu. ft.
(2) Gross heat value of exhaled gases..... 600,000,000 B.t.u.
(3) Liquid volume of loss ..... 126 bbl.
(4) Liquid volume recoverable from breathing 60 bbl.

The liquid volume loss represents 1.26 per cent on crude and the liquid volume recoverable represents 0.6 per cent on crude.

Ceramic Coating to Protect Cracking Units from Corrosion Announced

DISCOVERY of a new method of combating corrosion in refinery equipment, particularly in reaction chambers and dephlegmators of cracking units, was announced in a paper prepared for delivery before a group meeting on refining of the American Petroleum Institute Dec. 6, by Dr. W. F. Faragher, Universal Oil Products Co.

The method consists of applying and heat treating a ceramic coating to the inside of stills and chambers.

The composition of the coating and method of application are the discovery of Dr. Faragher, Dr. J. C. Morrell, and V. Mekler, authors of the paper presented by Dr. Faragher.

The method is said to be covered by patents owned by the Universal Oil Products Co., owner of patent rights to the Dubbs cracking process. The accompanying portion of the joint paper describes the composition and method of application.

AS A RESULT of a careful study of the corrosion problem as a whole, it was concluded if a satisfactory lining could be made of suitable, inorganic non-metallic materials of ceramic or mineral-like characteristics, this would be the most economical solution of the problem of protecting the larger elements of the cracking equipment and other refining equipment subject to corrosion.

The method of attack was based upon the use of a binding material mixed with the selected non-metallic ceramic or mineral substances. The selection of an inorganic heat-resistant binder practically resolved itself to the use of sodium silicate, while from a vast variety of ceramic materials which were tested, the best results to date were obtained with mixtures of fire clay, flint clays, plastic clays, sand or silica and small proportions of such minerals as asbestos, mica, etc.

It has been found convenient up to date to use some of the standard furnace cements as a component of the mixture. These cements, generally speaking, are composed of varying proportions of clays such as flint or plastic clays, crushed fire-brick, some so-called ganister, generally made up of quartzite, and small proportions of other minerals together with some sodium silicate as a binder.

These prepared furnace cements are mixed in pre-determined proportions with additional quantities of high-grade silica sand, sodium silicate, water, and small quantities of asbestos.

It can be readily appreciated that a satisfactory and successful protective coating of such mixtures must have the following properties:

1. Non-corrosive to acidic substances and gases, such as hydrogen chloride and hydrogen sulfide.
2. Non-cracking under rapid heating or cooling, that is a co-efficient of expansion practically the same as the metal to be protected.
3. Strong adhesion to the steel shell, chamber or other surface to be protected and hard enough to withstand hammering and cleaning of the inside surface of the chamber.
4. Permit easy removal of adhering coke, pitch, and other materials which accumulate during the processing of the oil.
5. The coating must not crack during the initial drying operation, and must be free from blisters in subsequent curing operation.
6. It is desirable that the mixture be such that it may be rapidly applied, e.g., by means of spraying, and that a durable coating after proper curing of from one-eighth to three-sixteenths of an inch may be obtained.

With all of the above desirable properties in mind, a large number of experiments were made to determine the limits of proportions of components and types of materials, and while satisfactory results were obtained with varying combinations, a practical mixture has been selected and a method of application and curing devised, all of which are shown in the following working instructions.

Instructions for Field Application of Non-Metallic Protective Coating

Sand-Blasting:

The chamber or other vessel to be lined is thoroughly cleaned and sand-blasted. If the chamber has tar or heavy coke on the walls, the coke should be burned off before sand-blasting. The temperature of the chamber is quickly raised to about 800 degrees F. and kept at this temperature until the tar or heavy coke is completely burned out or loosens. A good draft should be maintained during the early part of burning in order to avoid explosion of gases that may accumulate.

Any efficient sand-blasting equipment is suitable. An Adamant gun with steel fittings may be used for sand-blasting. A water-trap is inserted in the air line to the sand-blasting apparatus.

The sand for sand-blasting should be coarse and sharp, and it has been found that heating the sand increases the efficiency of sand-blasting about 25 per cent or more. A white silica foundry sand has been found most suitable for this work.

Composition of Mixture:

The following shows the proportions of materials for making up a 100-pound batch of lining material:

*Furnace cement ..... 60 lbs.
White silica foundry sand ..... 30 lbs.
Water glass, 40-43 Be. Technical Sodium Silicate 1 gallon
Asbestos, short fibre (Corresponded to JM #323) 1¼ lbs.
Water .... 200-1000 cc. (1¼ pints)

*Mixtures of various furnace cements have given excellent results.

Cable hooks from a reaction chamber before and after corroding. At left, a normal hook is seen. The other samples show various stages of corrosion in service

Preparation of Mixture:

The mixture is prepared as follows: The cement or mixture of cements are first mixed in a mortar box using a hoe. All lumps in the mixture should be broken up. The asbestos and sand are then separately mixed and afterwards incorporated with the furnace cement mixture. The water glass or technical sodium silicate is then added and the whole is thoroughly mixed in the mortar box. Finally the required amount of water is added (approximately the amount shown above) to obtain the desired consistency.

Mixing in 100-pound batches has been found to be convenient. This amount is sufficient to fill three standard-sized pails. The latter are used as needed on the working platform in the chamber.

Each 100-pound batch should cover approximately 100 square feet ⅛-inch thick. The thickness of the coating should be not less than ⅛-inch and preferably not more and ¼-inch. From ⅛-inch to $\frac{3}{16}$-inch is the ideal thickness. While the first batch is being sprayed, another similar batch is freshly prepared, thus making the preparation of the mixture as well as spraying a continuous operation.

Composition of Brushing Solution:

A brushing solution is prepared as a finishing coat for the lining. It consists of a mixture containing 5 pounds of furnace cement (50-50 Adamant-Sairset mixture) and one gallon of water glass or technical sodium silicate, 40-43 Be. gravity, and about three pints of water.

Spraying and Brushing:

Before spraying the openings of the residual and level lines are plugged. The spraying is accomplished by means of the Adamant gun. About 80 pounds of air pressure in the line is used for spraying. If the mixture in the pail is too thick for spraying, add only enough water to bring same to the desired consistency.

The dome of the chamber is sprayed first. During the spraying of the dome, the man with the mixture stands back close to the wall of the chamber, holding the pail about 2 feet from the top. The man with the gun sprays the mixture, starting with the neck and covering the section opposite to the position occupied by the man with the pail. One pail (about 35 pounds) will cover approximately one-third of the total area of the dome.

After each pail is sprayed on, both men in the chamber brush the sprayed section with the brushing solution, checking the thickness with the fingernail or with a knife.

The brush (paper hanger's brush) for applying the brushing solution is only dampened or slightly wetted with the solution in order to avoid thinning the already applied coating. The time required to spray on one pailful permits sufficient settling of the applied coating and prevents, in a measure, dilution when applying the brushing solution. When the mixture is sprayed on thick, it is brushed down to the desired thickness of about ⅛-inch and when sprayed on too thin it is brushed over with a fresh mixture and then afterwards brushed with the brushing solution.

* * *

Curing Equipment:

The lining is cured by heating at a regulated rate to a temperature of approximately 900 degrees Fahr. The detailed temperature schedule in curing is shown below.

The curing equipment consists of a gas burner with an air jet and short metal sheet pipe for combustion space. To control the temperature, thermocouples are used. A thermocouple is placed at the dome through the transfer line and another at the No. 4 or No. 6 level. The choice of the level line for the thermocouples depends on the size of the chamber and the total area to be cured. The top manhole is covered with a steel plate.

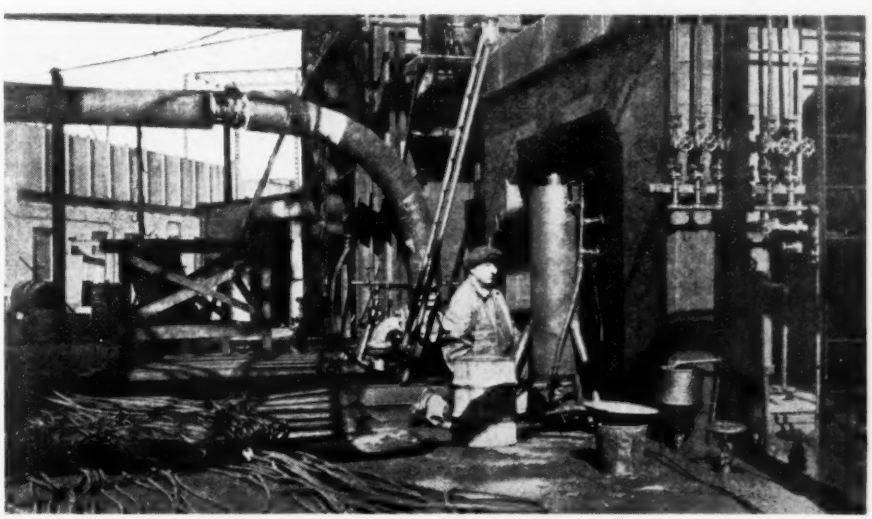
Temperature Schedule and Curing:

Before curing the lining is air-dried for about 12 to 18 hours. After the air-drying the temperature of the chamber is quickly raised to 180 degrees Fahr. and the following temperature schedule used from 180 degrees upward:

180°	to	200°F.	at the rate of	10	deg.	per hr.
200°	to	225°F.	at the rate of	5	deg.	per hr.
225°	to	250°F.	at the rate of	10	deg.	per hr.
250°	to	300°F.	at the rate of	20	deg.	per hr.
300°	to	360°F.	at the rate of	30	deg.	per hr.
360°	to	400°F.	at the rate of	40	deg.	per hr.
400°	to	600°F.	at the rate of	50	deg.	per hr.
600°	to	900°F.	at the rate of	100	deg.	per hr.

When the temperature reaches 900 degrees Fahr. it is maintained for about one-half hour and the fires are then cut. The chamber is then allowed to cool by natural radiation. With the proper draft, which is regulated by the steel plate at the top of the manhole, the difference in temperature between the lower and upper thermocouples can be entirely eliminated or made very small.

If there is any difficulty maintaining a uniform temperature throughout the chamber or throughout the portions of the chamber which have been lined, the slower rate of heating during the critical range (200 to 225 degrees Fahr.)



Sandblasting equipment used for cleaning the inside of chambers before application of the non-corrodable ceramic lining

should be extended about one hour for each 5 degrees difference in temperature between the upper and lower thermocouples. The critical range is presumably the temperature at which the water comes off at the most rapid rate and it is important that this slow rate be extended because it avoids overheating and consequently blistering of the lining.* * * *

Results Obtained in the Application of Coatings to Reaction Chambers

The desired properties of the lining have been attained.

Nine reaction chambers have been coated to date. (It is usually the practice to coat only the upper half of the reaction chamber as this is the portion which undergoes corrosion.)

In five of the chambers coated to date, three were new chambers and while apparently satisfactory after coating, some cracking of the lining occurred after several runs, especially in the upper part of the chamber, owing to stretching. This particular phenomenon did not occur with the linings where the chambers had been used for more than several runs.

Two chambers lined approximately five months ago, which have been in continuous operation ever since, were in perfect condition up to several weeks ago, at which time some of the lining in the dome of the chamber began to fall out. The sides of the chamber are in practically perfect condition at the present time.

Of four chambers lined approximately two months ago, three show defects only in small areas after continuous operation during all of the time, while the fourth shows an appreciable deterioration of the surface in the dome of the chamber. Usually the side walls are in better condition than the dome. In all cases the lining material remained hard and durable during all of the observation period.

From the experience to date, it appears that it is best practice after the installation of the lining and the repatching of small areas which become defective immediately, to wait for a month or more for further repairs of the lining. This will allow full development of defects, at which time these portions can be removed and replaced followed by a complete curing schedule, rather than to attempt to cure with a torch.

Properties of the Coating

The coating possesses all of the properties which were considered desirable and which have been previously enumerated. It is hard and in cross-section appears to be a mineral aggregate with the silica sand quite prominent. It is difficult, if not impossible, for a man of average strength to break a square inch section of the removed lining. The lining is resistant to hammer or chisel blows of considerable violence. * * *

Other Applications of Protective Coating

A series of tests made with sulfuric acid of various concentrations from 10 per cent to 95 per cent and with sodium hydroxide solution from 5 per cent to 25 per cent shows that the material is quite resistant to the action of acids and alkalies. In connection with the acid tests, there was an actual increase in the weight of the sample, showing the formation of a surface film of silicic acid, but in none of the tests was the material weakened to any observable extent.

It is contemplated applying the protective coating to other forms of equipment, such as for protection of reaction vessels, e.g., oil treating plants, particularly the acid settling chamber, and reaction vessels generally where corrosive materials are present; smokestacks, conduits, transfer lines, and in general where metal surfaces require protection against corrosion.

The Use of Some Catalytic Agents In Revivifying Contact Clay

By F. R. Lang,* A. P. Anderson* and G. H. Von Fuchs*

Read at American Petroleum Institute Meeting, Chicago, Dec. 3-6, 1928

IN REVIVIFYING filter clay that has been used for the contact filtration of lubricating oils, it has long been known that the use of too high temperatures for burning the carbonaceous matter from the clay will seriously impair the quality of the burned product.

Also, if too low temperatures are used, the carbonaceous material is incompletely removed. It was felt that the addition of a catalytic agent to accelerate the combustion of the carbonaceous material might enable us to get the desired combustion at a much lower temperature and thus obtain the good without the bad effects of high temperatures.

Method of Contact Treating (Filtering)

The contact treatment was made by heating the clay plus 10 times its weight of acid treated lubricating oil at 300 degrees F. for 25 minutes. The clay was then filtered from the oil and a color test (N.P.A.) was made on the oil.

For the acid treatment of the oil, 3 per cent by weight of commercial sulfuric acid (about 93 per cent H_2SO_4) were used. The acid sludge was allowed to settle about 24 hours before the contact treatment was made.

The oil used in the contact treatments had a Saybolt Universal viscosity of about 350 seconds at 100 degrees F.

From 85 to 90 per cent of the clay used could pass through a 200 mesh screen.

Experiments

A. Effect of Heat

To determine the effect of heat alone on the clay, samples of new clay were heated at various temperatures and then used in contact treating lubricating oil. The results obtained were as follows:

B. Effect of Catalytic Agents

The catalytic agents were added to the clay by dissolving in water enough of the chloride or nitrate of nickel, cobalt, manganese, iron, copper, zinc, cadmium and aluminum to give 0.25 per cent of the metallic element in 50 grams of clay and then mixing it with that amount of new clay. The exact amount of sodium hydroxide or else ammonia necessary to change the nitrates or chlorides to hydroxides was added as it was feared that some of the metal compounds might dissolve in, or react with, the oil by the first contacting or might be lost by being volatilized on heating. The samples of clay were dried at 300 degrees F. put through a 200 mesh screen and contacted in the same manner as were the sam-

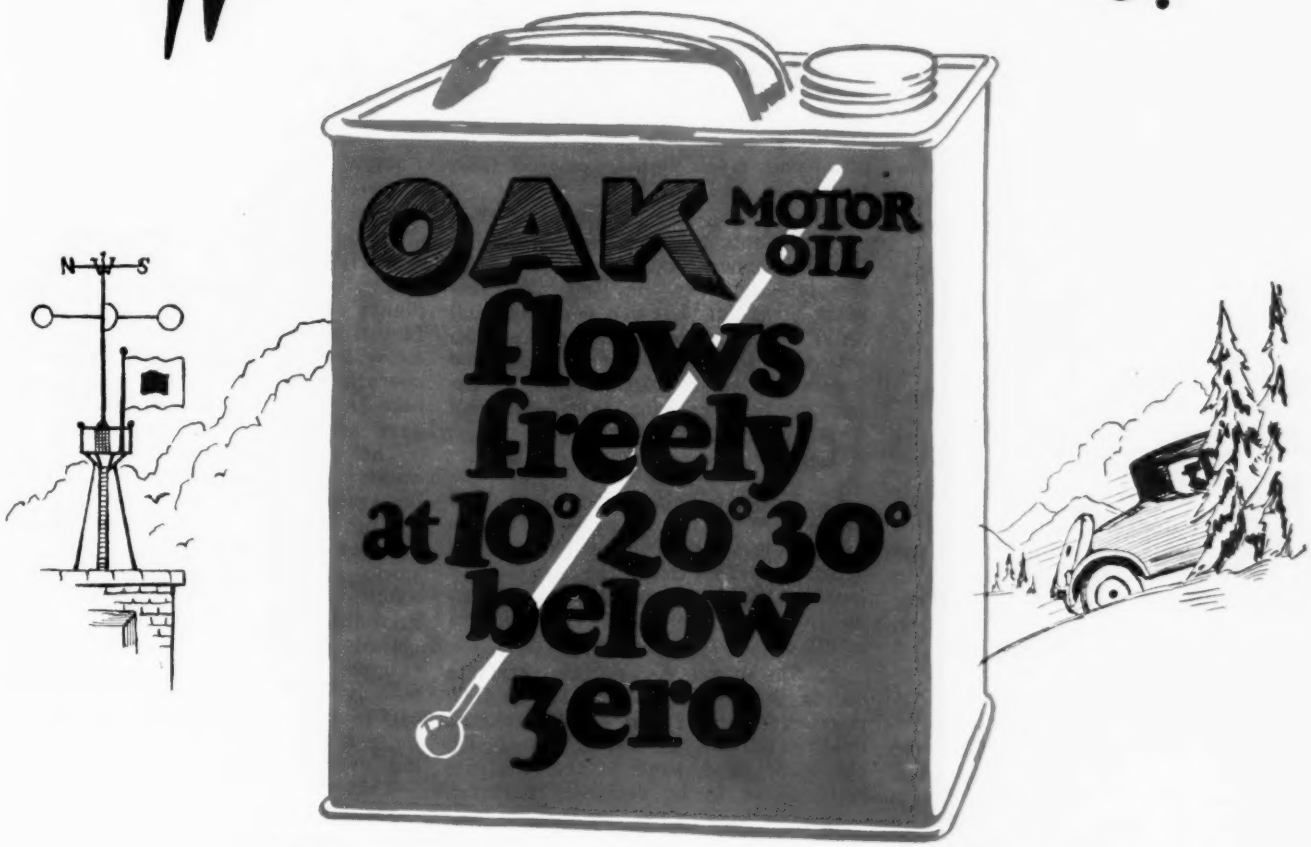
*Shell Petroleum Corp.

Table No. 1

Degrees F. at which the new clay was heated for 2 hr. in an electric muffle furnace	Not Heated	300	650	1000	1100	1200
N. P. A. color of oil after contacting with the clay.	1½+	1½+	2+	2+	3	3+

It is seen from the above table that a temperature as low as 650 degrees F. is harmful to the new clay.

Warning — cold wave!



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ples in Table No. 1. The clay was washed free from oil with gasoline, part of the clay was burned for 2 hours and a part for 5 hours at 1000 degrees F.

All of the samples of used clay containing catalytic agents were of lighter color after being revivified at 1000 degrees F. than the samples to which no catalysts were added. This indicates that the combustion was more complete when the catalysts were used and that a catalytic action had occurred.

Although the catalysts caused more complete combustion of the carbonaceous matter, they had in all except two cases, a deleterious action, in that the color of the oil used for the contact treatment was lighter when no catalyst was used.

Even the addition of the catalysts to the new unused clay was harmful except in the case of cadmium and aluminum.

Below are the colors of the oil obtained by the contact treatments.

Since it was believed that even the small amount of caustic soda used to change the salts to bases might have harmed the clay during the burning, most of the above work was repeated using a solution of ammonia instead of caustic soda. A slight excess of the amount of NH_4OH necessary to cause the change to the base was used.

In the case of the clay samples to which had been added the salts and ammonia, and dried at 300 degrees F., the colors of the contacted oils were in the same relative order as when caustic soda solution was used.

The colors of the oil, which was contacted with clay that had been revivified at 1000 degrees F., were slightly better when nickel or cobalt were used with ammonia than when no catalyst was used. The difference, however, was less than ½ N.P.A. The use of iron was unfavorable.

It will be seen from Table No. 2 that copper, zinc, and iron derivatives are very injurious even to the new unused clay.

All the metallic derivatives except nickel and cobalt were harmful when the clay was used more than once.

The darker colored oil obtained by contacting the samples of burned used clay containing the catalysts would seem to be due to some effect that the metals have. There may be some fusion of the metals with the clay to form silicates, thus reducing the porosity of the material.

In an effort to obtain combustion of the carbonaceous matter at a temperature as low as 800 degrees F., we have observed a very pronounced catalytic effect especially in case of the clay containing iron, this sample being much lighter colored than the blank.

Nevertheless, the bad effect of iron on the contacted clay already mentioned balanced the action of more complete burning and no improvement in color of the contacted oil could be observed. Neither was the action of the nickel or cobalt at 800 degrees F. beneficial in regard to obtaining lighter color lubricating oil from the contact treatment.

Recapitulation

1. The used clay burned at 1000 degrees F. in the presence of a catalyst appeared to have less carbon after burning than the used clay burned without a catalyst. This indicates that there was actually a catalytic reaction occurring.

2. The presence of certain catalysts during the burning of the day at 1000 degrees F. was found to improve the quality of the burned material. On the other hand, some of the catalysts were found to be decidedly harmful.

Since copper and zinc were so harmful to the new clay, they were not used in the burning of used clay.

3. It was found that the addition of certain metal salts to new unused clay, followed by the addition of enough caustic soda solution or ammonia to change to hydroxides, and heating the mixture to 300 degrees F., caused the efficiency of the clay to be seriously impaired. Derivatives of copper, iron, or zinc showed worst effect, while cadmium and aluminum apparently had no effect on the color of the contact treated lubricating oil.

The clay containing the copper gave a jet black oil on contact treating, the one containing iron gave an oil of 3½ N.P.A. color, while the new clay without catalyst gave a color of 1½+N.P.A. This is a remarkable finding and may explain why the color of contact treated oils is on some occasions different from what would be expected. In other words, even a small quantity of harmful metallic compounds may sometimes be great enough to make itself manifest in the color of the contact treated lubricating oil.

Table No. 2

Catalytic Agent	NONE	NI	CO	MN	FE	CU	CD	AL	ZN
N.P.A. color of oil contacted after the clay sample was dried at 300° F. (new clay)	1½+	2	2	2	3½+	Blk.	1½+	1½+	4
N.P.A. color of oil contacted with clay that had been heated for 2 hr. at 1000° F. in an electric muffle furnace (used clay)	3	3	3	3	—	—	3½	4+	—
N.P.A. color of oil contacted with clay that had been heated for 5 hr. at 1000° F. in an electric muffle furnace (used clay)	2½+	3	3+	3½	—	—	4+	5+	—

Automotive Production Rate Is Steady

NEW YORK, Dec. 8.—*Automotive Industries* this week said:

Manufacturing operations in the automotive industry will continue at a fairly steady rate through December. Increasing operations in some plants which have been making manufacturing changes for new 1929 models will be partly offset by decreasing operations in other plants which have been at capacity operation for the past several months.

The retail market throughout the country, though consistently better for the season than in recent years, is declining from the high pressure buying pace of the early fall, but new car stocks in dealers' hands are in good condition and factories generally are curtailing shipments to prevent accumulation of stocks beyond normal requirements. Several manufacturers, notably Ford and some higher priced car makers, are meeting a continuingly strong retail demand by retaining practically capacity operation.

That public interest in automobiles is as strong as ever is indicated by record attendances at recent showings of new cars. This attendance has been accompanied by the placing of much retail business for delivery after Jan. 1, a circumstance which will have the effect of building up a large retail sales volume during December which will not be reflected in reports on the month's business.

J. E. "Brick" Elliott of Elliott Core Drilling Co., left Los Angeles in his airplane, Nov. 9 and flew to Indio, Calif. At this point Mr. Elliott changed to a train and continued on to visit Mid-Continent and eastern cities. He attended the American Petroleum Institute meeting at Chicago.

E. E. Wild, general manager, Columbia Steel Tank Co., Kansas City, Mo., and F. C. Buchanan, director of sales, attended the American Petroleum Institute convention at Chicago the first week in December, according to Merrill V. Nipps, who recently was appointed public relations director for the company.

E. F. Houghton & Co., Philadelphia, has published a 33-page booklet entitled "Houghto-Clean for General Industrial Cleaning." It contains a brief outline of the use of the Houghto-Clean series of cleaning materials for general cleaning in engine rooms, and various office and industrial buildings.

VISIBLE BOWLS ·.
if they aren't Gilbert & Barker
they aren't NULTRA

The pump which does not carry the G & B seal can't have the famous NULTRA bowl. The formula for NULTRA glass and the name NULTRA are fully protected by patent.

The paractinic property of NULTRA bowls protects standing gasoline from the yellowing action of the sun's rays. It keeps the gasoline in all its sparkling brilliance, so that it displays the purity of your product, attracts the motorist and steps up gallonage.

Users have become convinced that there is no substitute for G & B pumps with the NULTRA bowl. They are in use the country over. Up-to-date marketers have discovered their value as builders of gallonage and when purchasing new equipment insist upon them.

The T-176 is the sight measure type; T-179 is the mechanical measure model. Write for Bulletins on either type you use.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS.

Visible Gasoline Pumps, mechanical measure or sight measure, hand or air operated, equipped with the famous NULTRA *bowls. Also piston type pumps, with visible discharge. Pump and tank outfits for motor oils, including the popular "NARRO-LUBE" type. Special pipe sealing compound for gasoline and oil pump and tank installations.*

Set Example in Fair Trade Practices, Majewski Urges Big Marketers

CHICAGO, Dec. 6

"SHOULD the American Petroleum Institute's code of ethics fail of universal adoption and respect, then let the true leaders of the industry unselfishly set the example, themselves eliminating from their marketing policies all these unethical practices I have been talking about. The rank and file will follow the movement, as has been the custom since the inception of the industry."

This was the concluding paragraph of an address by B. L. Majewski before the American Petroleum Institute in Chicago, Dec. 4 to 6. He frankly confessed doubt that the code would prove a forward step but professed a hope in the face of this doubt. In substance he checked the whole matter to the executives of the major companies, to "weed out" unfair and unprofitable practices from their own business policies. Excerpts from Mr. Majewski's address follow:

"Problems of production and refining have intrigued the best brains of the oil industry in previous years, almost to the exclusion of the distributing phase of the business. It is evident that a complete reversal of form is at hand and that this brain power, at least temporarily, is focussed on reducing the economic waste in distribution.

"Scan the personnel of the Institute's committee on Code of Ethics and be convinced that the leaders in the industry are actively attacking the wasteful marketing practices in vogue for seven years." (*Accompanying this account is a list of extravagances enumerated by Mr. Majewski in his address.*)

"Clearly to visualize the extent and cost of these uneconomic practices, it is necessary to go back several years to determine the causes and the reasoning back of our policy of subsidizing retail outlets and then competing with the subsidy of our own creation by the establishment of our own retail outlets.

"The greedy and unprofitable combat for gallonage has increased in momentum and scope by leaps and bounds since 1922. It was at that particular time that the leaders in the industry in order to find a market for excess stocks of gasoline inaugurated an intensive campaign of loaning pumps, tanks, air compressors and the like, promiscuously and on the slightest pretext, in fact, wherever they could get permission to install them.

"In the subsequent seven years all that was required for anyone to get into the retail oil business was to have control of a site on a heavily traveled street or highway. The oil company would do the rest, going so far as to induce the owner or lessee of the land to let them construct and completely equip a retail oil station thereon, without any interest charge for the financing. In return for this assistance the operator promised to handle and advertise merchandise of the assisting oil company's manufacture.

"The irony of it all is that the oil company was in most instances repaid for the moneys advanced by it for the construction of fixed improvements, through the medium of quantity discount rebates or other concessions allowed by the oil company. In some instances the oil company paid a monthly rental for the privilege of erecting and maintaining its advertising on the premises, and I am told that in several cases the rental paid was sufficient to repay the assisting oil company for moneys advanced within a period of two years.

"These practices have become so prevalent among the well established marketing organizations that the trade has taken advantage of the fact, going so far as to dictate the kind of assistance desired and the margin of profit required. In matters of equipment the trade in the past three years has dictated not only the amount of equipment to be given them, but the types and kinds as well. I am sure that everyone engaged in marketing in recent years will readily give testimony that the type and kind usually selected was more expensive than necessary.

"The oil companies motivated solely by a desire for more gallonage and acquisition of what are considered the key units among privately owned outlets have been bidding against each other to an absolute point of loss to the successful bidder. This foolish rivalry has attracted an irresponsible and unscrupulous class into the business. This type of accounts invariably turn out to be bad credit risks, veritable leeches on commerce. Experience teaches that this class know absolutely nothing about good merchandising practice and maintain their existence by playing one oil company against another.

"I know of instances where an oil company would tighten up on its credit extension to certain large retail accounts, because it felt that the credit extended was being used by the recipients for expansion of their tire and accessory business, and in some cases for the purchase of real and other personal property. As soon as these accounts made sure that the oil company would not recede from the position taken, they served notice on the oil company of cancellation of lease agreements binding them, notwithstanding the fact that said lease agreements provided for payment of penalties—usually amounting to the cost of installation of equipment. In three of these instances, of which I have knowledge, the penalty was in excess of one thousand dollars and who do you suppose paid the money? Other oil companies who had been waiting for just such an opportunity!

"Early this year I addressed several state association meetings on the subject of loaned equipment and other marketing evils. At that time the only figures available to me were the costs reflected by the marketing expense records of our company. Since then S. F. Bowser & Co., Fort Wayne, Ind., has prepared a comprehensive survey of the methods of distribution and of retailing gasolines and lubricants. The survey as prepared, in my opinion, is a distinctive and meritorious contribution to the oil industry.

"Quoting from the survey, 'It is estimated that 85 per cent of the equipment used for dispensing gasoline is owned by oil companies of one sort or another and is leased by them at a nominal rental to operators of retail outlets. On this basis 513.000 pumps and tanks valued at $154,000,-

Anticipating the Code

A LARGE operator recently told me he was tying up all the business he could on a concession basis slightly better than that obtainable from the majority of suppliers. I asked his reason and his reply astounded me. Here it is:

"I understand the Institute is about to promulgate a code of ethics and present it for adoption at the December meeting. Contracts and agreements written before it is adopted are not to be violated as a consequence. I am only doing what major competition has done already; getting my business protected from competitive attack."

000 are put on equipment leases. Repairs and depreciation on this investment probably amount to $36,000,000 annually and interest on the investment to $9,000,000, bringing the annual charges for maintaining this system to over $45,000,000.'

"Again quoting from the Bowser survey—'There are at least three times as many retail outlets as are required. As a result of the attendant waste of labor, supplies and expense, the retail marketing of gasoline and oil to motorists is costing at least three times as much as the retail marketing of parallel products and the marketing end of the business is probably losing in excess of $50,000,000 a year.'

"And this is not all. The astounding figures just quoted merely refer to the cost of maintaining gasoline pumps and tanks. What about the lubricating oil tanks, air compressors, lighting systems, wiring, and oiling lifts, under the guise of leased equipment? Who pays the bills for the items mentioned under the cloak of advertising and the financing of construction and maintenance under Item C? The partial answer everyone here present knows—The Oil Companies. The rest of the answer I shall endeavor to unfold to you.

"Now then, since we have 317,000 retail outlets and over 225,000 of them are not needed adequately to serve the public, even though of our own creation through subsidy, it is safe to assume in the absence of positive records that $200 is spent annually on each of these 225,000 admittedly unnecessary subsidies, a staggering total of another $45,000,000.

"You will properly query what is the $200 per unit supposed to cover. That, my friends, takes care of the equipment other than pumps and tanks and the peculiar items under the cloak of advertising. Also in it I have included $75 to cover the salesman's salary and expenses incidental to his keeping the subsidies in his charge under the corporate trademark or flag—a real task as many here present could testify—if they felt so inclined.

"To the statistical 'hound' these costs summarized spell approximately one cent a gallon on the estimated gasoline consumption for this country during 1928.

"After considering these astounding statements of facts, it seems readily apparent why leading exponents of merchandising in other lines as well as many financial leaders, view our seeming helplessness with ridicule and scorn.

"There is no good reason why a dealer desiring to enter the retail oil business should not pay for the equipping and maintaining of his establishment just as in any other type of business. For example: If one desires to engage in the retail drug business, he must buy and pay for his fixtures first and subsequently for his inventory of stock—the wholesale drug houses do not furnish the fixtures or maintain them in order to attract the prospect as a customer.

"Also try to picture for just a moment one of the successful mail order houses of this country, operating retail stores in certain cities and towns, going to a merchant about to open a similar store in that city or town and offering to furnish fixtures for his store in order to sell him at wholesale the merchandise he will retail in competition with their own retail stores at the same points.

"It is silly to try and place the blame for the continuance of this costly system on either the small or large factors in the business. The small jobber cannot afford it and all of the larger factors are equally responsible for its continuance.

"As one continues it becomes apparent that the distributing end of the business has been derelict in its duty to both its own stockholders and to the public. Its stockholders have charged it with the task of merchandising on a quality and service basis backed by splendid and costly advertising programs; however, instead of so doing they have become peddlers of concessions and subsidies.

"The failure in its duty to the public is more serious than its failure to its corporate interests in that public opinion is not to be trifled with. How can the industry on one hand tolerate a continuance of these uneconomic marketing practices and encourage the operation of retail facilities far in excess of the number needed adequately to serve the public, knowing that ultimately the public will have to stand at least a portion of this needless expense?"

Oil Marketing Companies' Follies

A. Under the guise of leased equipment, we have:

1. Gasoline pumps and dispensers
2. Underground storage tanks for gasolines
3. Lubricating oil storage tanks
4. Air compressors
5. Lighting systems including flood lights, wood and concrete light standards and complete wiring in many instances of buildings, etc.
6. Rotary greasing and oiling lifts
7. Grease guns—flushers—handy oilers, etc.

B. Under the cloak of advertising, one can find:

1. Furnishing paint materials and labor for the painting of privately owned service station buildings, garages, fences, farmers' homes and outbuildings
2. Gold and plain lettering on windows and buildings having no connection whatever in the sale of gasoline and oil
3. Furnishing expensive electric signs and paying the electric current bills
4. Paying light and power bills for entire station operation
5. Payment of privilege taxes

C. And last, but not least, we have the prize winners:

1. Construction of driveways and the subsequent maintenance thereof through furnishing screenings, gravel, cement, etc.
2. Construction of canopies, buildings and other structures
3. Loaning money for all of the foregoing without proper security or without collecting any interest thereon

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

34247.—**Lubricating oils and greases, petrolatum,** Buenos Aires, Argentina, agency.

34829.—**Motor oils,** Aschaffenburg, Germany, agency.

34879.—**Paraffin,** Shanghai, China, purchase.

34902.—**Paraffin for candles,** Habana, Cuba, agency.

34909.—**Gasoline,** 30,000,000 gallons yearly, Glasgow, Scotland, purchase.

34909.—**Naphtha, oils and greases,** Montevideo, Uruguay, purchase.

34910.—**Petroleum coke** for case hardening, Liverpool, England, purchase and agency.

34624.—**Paraffin,** Valparaiso, Chile, agency.

34646.—**Paraffin,** Valparaiso, Chile, agency.

34654.—**Lubricating oils and greases,** Montevideo, Uruguay, agency.

34691.—**Lubricating oils and greases,** Munich, Germany, agency.

34692.—**White mineral oil and red cylinder oils,** Hull, England, purchase.

34694.—**Lubricating oils and ordinary engine oils,** The Hague, Netherlands, agency.

34695.—**Technical petrolatum,** Hamburg, Germany, agency.

34696.—**Lubricating oils,** Buenos Aires, Argentina, agency.

34698.—**Petrolatum** for use on firearms, Buenos Aires, Argentina, agency.

34735.—**Lubricating oils and greases,** Rotterdam, Netherlands, agency.

34760.—**Axle grease,** Habana, Cuba, agency.

34521.—**Paraffin,** Dresden, Germany, purchase.

34401.—**White mineral oil,** Bombay, India, purchase.

34403.—**Benzine, gas oil and lubricating oils,** Hamburg, Germany, purchase.

34404.—**Paraffin,** Brussels, Belgium, purchase and agency.

34405.—**Gasoline and lubricating oils,** Oporto, Portugal, agency.

34406.—**Novelty candles,** Sydney, Australia, sole agency.

34407.—**Paraffin and lubricating oils and greases,** Montevideo, Uruguay, agency.

34498.—**Diesel oil,** Rombas, France, purchase.

Bottle Fold Type Folio

Your Name in Gold Free

Complete with Bottle Fold and Bottles *only* $15.30

364—A very complete and practical folio made from heavy 5-oz. black cowhide. 3¼-inch pocket that holds leather handled bottle fold. Contains sixteen 4-oz. plain bottles. One-inch pocket for stationery. Leather case containing six ½ oz. jars $3.25 additional.

Other styles in our FREE Catalog

L-U-C-E

Builders of Sales Luggage

614 Delaware Kansas City, Mo.

Guaranteed 100% PURE PENNSYLVANIA OIL

Finest Grades of 100% Pure Pennsylvania Products

GASOLINE
KEROSENE
FUEL OIL
NEUTRALS
BRIGHT STOCKS
MOTOR OILS

Our 30 years of experience is our guarantee to you of the finest and best products that can be produced.

Let us quote on your requirements.

Write—Wire—Phone

Superior Oil Works
Warren, Penna.

ON THE LAZY BENCH

National Petroleum News

Two L8

There was a lad named Willie T8,
Who loved a lass named Annie K8,
He asked if she would be his M8,
But K8 said W8.

His love for her was very gr8,
He told her it was hard to W8,
And begged to know at once his F8,
But K8 said W8.

Then for a time he grew sed8,
But soon he hit a faster g8,
And for another girl went str8,
Now K8 can W8.

—The Marion Line

* * *

A man had been riding in a stuffy smoking car, and when the train stopped at the station, he went out on the platform and took deep breaths of fresh air. In his enjoyment he said to the brakeman: "Isn't this invigorating?"

"No, sir," was the reply, "this is Coshocton."

—Skelly News

* * *

If Mother Only Knew

Mother: If you get a job in the chorus, I hope you won't wear tights.

Daughter: Oh, but they don't wear them any more.

Mother: Well, I'm very much relieved to hear that.

—The Pure Oil News.

* * *

Landlady—"Well, what's wrong now?"

Long Suffering Boarder—"Oh, nothing. I just think you're getting too much mileage out of this roller towel."

—The Loreco Diamond.

* * *

Old Friend Scores One

Judge—"Isn't this the fifth time you have been arrested for drunkenness?"

Old Friend Sot—"Don' ash me. I thought you'sh keeping score."

—The Marion Line

* * *

If a man, even one on a small salary, but resolutely resists the temptation to have a little fun occasionally and forms the habit of systematic saving, in twenty-five years or so he will have enough money to take advantage of a business opportunity and lose it all in a lump.

—Skelly News

* * *

Henry: "What is puppy love?"

Eddie: "The beginning of a dog's life."

—The Pure Oil News.

"Hay, Moike, and phwat do ye t'ink of these new sanitary drinkin' cups?"

"Sure, Pat, and soon we'll be havin' to spit on our hands wid an eye-dropper."

—The Loreco Diamond.

* * *

Waiter: Would you like to drink Canada Dry, sir?

Customer: I'd love to, but I'm only here for a week.

—Printers' Ink Monthly

* * *

Oswald of Missouri

Nurse—"Well, Oswald, do you want to see the new brother the stork brought?"

Oswald—"Naw! I wanna see the stork."

—The Marion Line

* * *

Judge (to prisoner)—Have you anything to say before I pronounce sentence upon you?

The Prisoner—Yes. Please hurry it up. I want this to make the first edition of the morning papers.

—Skelly News

* * *

Jones—I hear they have a new machine that can tell when a man's lying. Did you ever hear of one?

Smith—Hear of one! Good Heavens! I married one.

—Waverly "Wow"

* * *

First Foreigner (airing his English)—"How are you, I hope?"

Second ditto—"Thank you, no doubt."

—The Loreco Diamond.

* * *

"What did the burglar do when he found the lady in her bath?"

"He covered her with his revolver."

—The Pure Oil News.

* * *

New bedtime stories in the way of acceptance speeches seem to be the latest in order.

—Skelly News

* * *

Judge—Since Rastus is 22, and you, Dinah, are 55, it is clearly a case of Spring marrying Autumn.

Dinah—Oh, no, your Honor. 'Pears to me, it's mo' like the Day o' Rest marryin' Labor Day.

—Waverly "Wow"

* * *

"What do you do when your deferred payments come due?"

"Me? I defer paying them."

—Skelly News

will see NATURALINE ADVERTISING in 1929

IN THIS ISSUE
CHICAGO EXHIBITORS LIST
AIR TRANSPORT
THE TRADE JOURNAL OF COMMERCE
Published Weekly at 34 N. Crystal St., East Stroudsburg, Pa. Executive and Editorial
Vol. 5, No. 2
October 27, 1928
To the commercial airmen of
An Invitation—
STINSON AIRCRAFT
Aircraft Standard of the World

The Jobber who takes a Naturaline franchise inherits a popular acceptance and goodwill established over a period of two years. This year, conservatively estimated, 495,000 possible users will read Naturaline advertising. This is a tremendous help to you.

Naturaline sells on its merit. Pilots are appreciably more fuel conscious than motorists. Fuel is a much more vital matter in the air.

These discriminating users have themselves established the superiority of Naturaline in actual flying.

Testimonials of some of the foremost pilots and Aerial Transport Companies of the country will be sent to you upon request. Convincing evidence that Naturaline is *the* aviation fuel for you to distribute.

Your territory may be open. Volume and opportunity for profit in this end of your business is steadily increasing.

Write us for further information.

NATURALINE
THE SUPER AVIATION MOTOR FUEL

NATURALINE COMPANY OF AMERICA

Chestnut & Smith Bldg., Tulsa, Oklahoma

Shorten Terms on Tank Car Shipments, Credit Manager Urges

By H. M. Edinger*

Presented Before American Petroleum Institute, Chicago, Dec. 4-6

REDUCTION of net terms on tank car shipments of all refined products, except lubricating oils, to 10 days, with the discontinuance of the one per cent discount, was urged by E. M. Edinger, Barnsdall Refineries, Inc., before the group session on Marketing Problems of the institute meeting at Chicago Dec. 6.

He recommended that the institute appoint a committee to standardize terms of credit on refinery shipments. He said that surveys in the Mid-Continent field showed that the turnover of gasoline and other products, except lubricating oils, through jobbing outlets averaged less than 10 days. Present terms on gasoline shipments are one per cent 10 days, net 30 days.

On tank car shipments of lubricating oils Mr. Edinger recommended net of 30 days, less one per cent in 10 days.

On shipments of compounded lubricating and motor oils in tank cars and in carload package shipments, maximum net terms should be payment of one-third in 30, 60 and 90 days, with two per cent in 10 days, he advised.

On less than carload shipments of lubricating oils in packages maximum terms should be 30 days net, with one per cent discount in 10 days.

DURING the past 10 or 12 years, the petroleum industry has passed through a tremendous development or expansion period, with the result that "destructive competition" has flourished most flagrantly throughout the refining and marketing branches of the industry. During this wild scramble for gallonage or geographical representation, many generally accepted economic principles and theories of good business have been ignored or discarded, resulting in a tremendous loss to the industry.

This enormous expansion was due, largely to the extraordinary growth of the automobile industry which developed a demand for motor fuels and lubricants far beyond greatest expectations. Due to the wide distribution of the automobile, it was necessary that the oil industry equip the entire United States, within a short period of time, with adequate distributing facilities in order to meet the demands of the public for petroleum products, and the necessary service which was expected as a matter of convenience.

Considering the enormity of this expansion, and the time in which it was accomplished, there is little wonder that irregular and unsound business methods prevailed. Other manufacturing industries have gone through like periods, but eventually they have all had to face the cold hard facts as presented by their balance sheets and earning statements, and proceed to put their business on a sound economic basis, or admit their incapability of operating a fundamental industry in a manner satisfactory to its stockholders and financial interests. This is exactly what happened in the petroleum industry, and we are now passing through the period of reconstruction, simply because we failed to heed or benefit from the experience of other industries which had passed through like periods, with the same disastrous results.

During any expansion period it is a matter of history that "credit" is always mis-used or over-expanded and the oil business has certainly been no exception to the rule; terms have been used as a means of competition, without proper regard as to the financial responsibility of the buyer or the economic structure of the business based on the turn-over of its products through distributing outlets; the result being that thousands of people have been financed and put in the oil business who were qualified, neither financially, morally or mentally to become a part of our great industry.

As more people of this class were put into the business, it naturally divided up the business to such an extent that it became unprofitable to the legitimate distributor. Many failures occurred and many companies had to absorb large credit losses or take over the distributors they had put in business through an unsound "credit policy." In other words, we tried to build up a fundamental business on an unsound foundation and it collapsed over our heads.

All of this sounds like a serious reflection on the credit men of our industry; however, I wish to state, unqualifiedly, that in my opinion, the credit men were not responsible for bringing about these conditions. Had they been given proper authority to exercise their own judgment, either singly or collectively, we would not have in effect today the unsound terms and credit practices being used. The credit men were over-ruled by their sales departments or managements and instructed to carry out a "credit policy" which was fundamentally unsound. We insisted that we must have gallonage in order to maintain volume production through our refineries, regardless of the price which we received for our products, the credit losses incurred or the business experience of the people we were financing. Under these conditions the credit man was helpless, and it is remarkable that the losses were as small as they were.

We hold our treasury departments responsible for every dollar of cash received and disbursed by our companies, but we have allowed and instructed our credit men to take our products (which are the same as cash to our business) and loan them to different people and companies all over the United States, but if your treasurer had loaned these same people the equivalent amount of "cash" without security he would have been discharged for the first offense.

We have expected our credit men to be "bankers" without giving them one-half the facilities for procuring the credit information that your banker has when he makes a loan. We have called our credit man in and introduced him to Mr. Jones (a personal friend of ours) and instructed him to extend to Mr. Jones the credit he wanted and censured him for having questioned this party's credit responsibility, although we had never seen his financial statement.

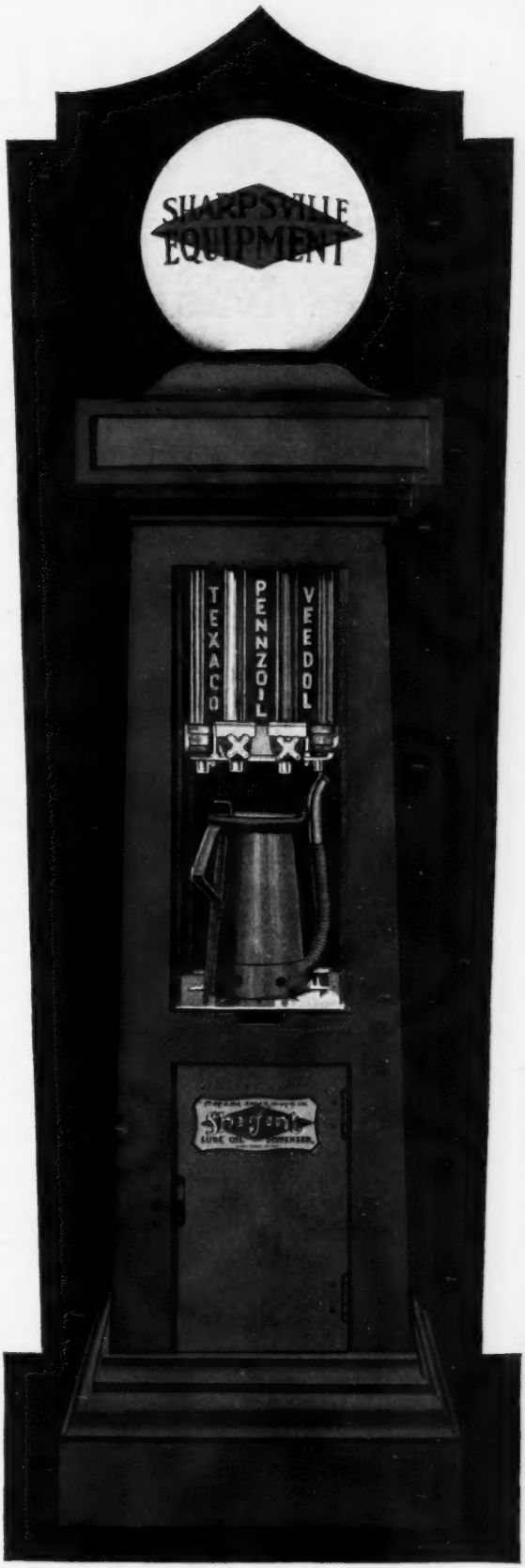
When we apply for a loan at our bank, and the second vice-president turns us down, do we ever put the loan over by going to the first vice-president? Why: because the second vice-president is credited with having

*Barnsdall Refineries, Inc.

NOW

a Lube Dispenser that meets an urgent demand!

Sharfont
LUBE OIL DISPENSER



- ¶ Low priced.
- ¶ Displays trade names of oils dispensed.
- ¶ Oil dispensing tubes attractively illuminated.
- ¶ Oil flows through tubes while being dispensed.
- ¶ Will fill oil dispensing bottles through spouts and there is sufficient room between draining platform and tubes to fill five-quart measures.
- ¶ Built to handle four or eight grades of oil.
- ¶ Drop panels on all four sides operate independently, making it possible to close one, two, three or four sides. Storm-proof.
- ¶ Equipped with electrical heating units. Low, medium or high temperature control.
- ¶ Concealed piping and wiring. Separate heat and light control switches.
- ¶ Well designed cabinet, substantially constructed, finished in attractive colors.
- ¶ Entire cabinet can be securely locked.
- ¶ Easy to install and easy to operate.

Price for 8 tube Sharfont ~ $177.00
Price for 4 tube Sharfont ~ $149.00

Send for Bulletin F-1

SHARPSVILLE BOILER WORKS CO.
SHARPSVILLE • • • • • • • • PENNSYLVANIA

FORMULA

for a

Business Getting 100% Pennsylvania Motor Oil

First—A quantity of 450 Bright Stock (Sharples Process) refined at the *Coraopolis* plant of The Freedom Oil Works Co.

Second—A quantity of 100% Pennsylvania Crude Neutrals refined at the *Freedom* Plant of The Freedom Oil Works Co.

Third—Blend to tested specifications by experienced specialists of this 49 year old organization, producing a line of Freedom Motor Oils which places your business above competition, pleases your dealers, and helps them to hold their customers.

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FREEDOM

made a careful investigation and when he recommends against the loan his judgment is accepted as final and conclusive by his board. It is my opinion that the credit man should be given an official position with his company, so that he cannot be subsidized by any other department in passing on his credit problems.

We have shipped our lubricating oils in the spring and told our jobber to pay us in the fall, hoping he would live or stay in business that long so we would have a chance to get our money. We have loaned equipment and put someone in business across the street from our own distributor or our own filling station, so that he could have some of our business and decrease the gallonage through our own outlets, and likewise increase our sales overhead expense. After he had used our pumps and equipment a few months, a competitor offers to loan him some better looking equipment and we are asked to remove ours; so we take it out at our own expense and expend about half what it is worth to put it back in first class shape and hope we can induce someone else to take it: if not, we put it in the warehouse and call it one of our valuable "current assets."

We give thirty day terms to our jobber who uses 20 cars of gasoline a month. He sells the gas, collects the money and having a surplus of cash on hand goes out and builds another bulk plant or filling station. After another month, he finds that he cannot get the gallonage he expected through these new outlets because another competitor has entered the field. In the meantime our credit man checks up the situation to find out why the jobber is getting slow and finds that, instead of having an accounts receivable on his books, it has been converted into a loan on a new distributing outlet, which is not operating on a profitable basis. We go along a few months trying to collect our money and in the meantime a price war develops. We then find that our distributor is in considerable distress and is losing money, but he must have some more gasoline in order to hold his business, but cannot pay for it right away, so we ship him a few more cars.

After a while we get hard-boiled and start suit for our account, which improves our friendly relationship(?). About that time, another competitor appears and ships him some gasoline on long terms, so he can pay us off; he operates for a few months and goes "broke" and a large credit loss occurs. Why? Simply because the terms granted were improper and unsound economically. The maximum terms, which should have been granted to that jobber were ten days based on his turnover, and we ruined what might have been a good distributing outlet by forcing a loan upon him and allowing him to over-expand instead of making him increase his

working capital to meet his current needs and operate on a business-like basis.

In our retail business, we have asked our credit men to extend credit to everyone from the office boy to the day-laborer in the field; the only requisite being that the party securing credit must drive a "car" into our filling station, although his equity might not be more than ten per cent of the value of the automobile and his earning power not more than fifteen dollars per week. We have supplied the farmer his needs this year, and asked him to pay us next year, if he has a good crop.

All of these remarks may be properly interpreted by you as "destructive criticism" but I have simply tried to show what some of the existing "credit evils" are in order to convince you that changes should be made.

As a result of several different surveys in the Mid-Continent territory, we have developed that the turnover of gasoline and all other refined products, except lubricating oils, through jobbing outlets appears to be an average of less than ten days. It is, therefore, apparent that the 1-10-30 terms generally used in the industry covering tank car shipments of these products are fundamentally unsound and that the net terms on these products should be reduced to ten days. There might possibly be some exception to this rule in the shipping of fuel oil to industrial users, such as railroads.

If, therefore, we accept the ten day net terms as being correct, based on turnover, it automatically eliminates the present one per cent discount for cash. A cash discount is a premium for cash payment where the turnover requires 30 days or more and when we reduce the net terms to ten days there cannot possibly be any place for a discount. In view of the turnover being established at less than ten days, the present cash discount is not a premium for cash, but rather represents a reduced selling price, if analyzed correctly. Besides this the refiners' terms on crude purchases are definitely fixed on the 10th and 25th of each month without discount—also the jobbers to whom we sell our products allow no discount to customers.

Therefore, net terms on tank car shipments on all refined products, with the exception of lubricating oils, should be reduced to ten days and the one per cent discount be discontinued as applying to these products. Various draft terms may also be used so long as the net terms are not extended beyond ten days and no discount is allowed, this being left to the credit men's judgment depending upon the credit risk involved.

On tank car shipments of cylinder stocks, bright stock, neutral oils and industrial oils, I recommend that the maximum net terms should be 30 days less 1 per cent discount if paid within ten days. Intermediate terms less 1 per cent to be fixed by the credit men, based on risk. On shipments of compounded lubricating and motor oils in tank cars and in carload package shipments, the maximum net terms should not be more than one-third—30, 60 and 90 days, subject to 2 per cent discount if paid within ten days. Intermediate terms permitted subject to the same discount.

On L.C.L. shipments of lubricating oils in packages, the maximum terms should be 30 days with 1 per cent discount allowed if paid within ten days.

As far as retail credits are concerned, I am not going to make any specific recommendations. There is, however, a great lack of any uniformity in handling credits for this class of trade, depending largely on local situations in the various territories. In many localities 75 per cent to 80 per cent of the volume distributed through filling stations is sold on credit and with the cosmopolitan population which is now using the automobile as a means of transportation and pleasure, it has become more and more difficult to handle this class of credit and I will defy any credit man who is obliged to pass on any volume of this class of trade to do so intelligently from a credit standpoint.

It is not so much the volume of credit losses involved as it is the enormous overhead expenses entailed in carrying thousands of small accounts on the books and collecting them. If we were to apply the exact amount of office expense and overhead connected with all of the small sales averaging not more than $5 to $10 a month which go through our distributing outlets, we would find that there is absolutely no profit in these particular sales and in all probability they would show net losses.

In my opinion, filling stations are nothing more than an extension of the chain store proposition. We are locating our stations for the convenience of the public, and there is no reason why our sales through the filling station outlets should not be on a cash basis any more than the chain store grocery. In fact there is more reason for the filling stations to be operated on a cash basis because in most cases we are furnishing a luxury where the chain store grocery is furnishing a necessity.

It is, therefore, my opinion that a standardization of terms within the petroleum industry can only be accomplished by means of the cooperation and assistance of some national association which can cover the entire territory represented by the Mid-Continent, southwestern and eastern groups and it is also my opinion, as well as others who are interested in the subject, that the American Petroleum Institute is the only asso-

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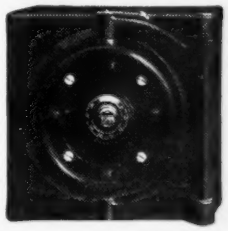

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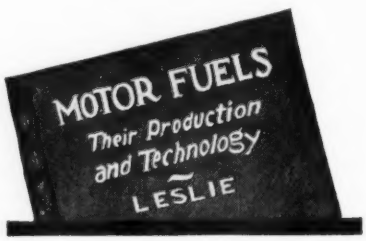

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ciation of national scope which can handle this matter intelligently and effectively.

At the present time the A.P.I. has in effect no less than 12 committees covering various phases of standardization. These cover standardization of equipment, production procedure, and uniform methods of oil accounting. These committees have performed a wonderful service to the petroleum industry in bringing about a standardization in these lines.

I, therefore, wish to recommend that the American Petroleum Institute appoint, at once, a general committee on standardization of terms for the petroleum industry; also regional committees to assist and advise with the general committee, with the definite purpose of adopting and putting into effect a set of standard terms, applying to various grades of petroleum products shipped in tank cars, and packages, which are economically sound, as well as fair and equitable to both refiner and jobber. Also that these committees make a thorough investigation of credit conditions in the retail marketing divisions of our industry and recommend some plan which can be used, either generally or regionally. I also advocate that a code of ethics be devised to apply to the use and observance of the standardized terms which are adopted by the industry.

When this is accomplished a great piece of constructive work will have been performed for the Petroleum Industry and we will have engendered the good will and respect of our jobbing and retail outlets as well as the consuming public; however, greatest and most important of all, we will have put a fundamental industry on a sound financial basis as far as credit is concerned.

Changes in Oiling, Greasing and Fueling Systems of New Auto Models

Here is a means by which even minor changes in lubrication and fuel systems of new models of automobiles may be quickly made known to the men in your lubrication stations.

John Younger, head of the automotive engineering department of Ohio State university, and editor of Automotive Abstracts, will tell NATIONAL PETROLEUM NEWS readers what the changes are in both engine and chassis lubrication, and in fuel systems, in new models, as they are brought out.

His articles will appear irregularly closely following the announcement of new models by the automobile companies.

The Chevrolet Motor Co. is announcing a new six-cylinder model for 1929. Among the features of interest are that, first, an engine thermometer and oil pressure gage are included on the instrument panel. A theft-proof Electrolock is provided. Gasoline is given to the carburetor by A. C. fuel pump with an integral gasoline strainer which has been adopted as standard. The rear axle cover plate has an internal oil deflector for better lubrication of the differential. The six-cylinder engine has a bore of 3 5/16 and stroke 3¾. The compression ratio is 5.01 to 1.

Spark plugs are at the extreme left of the chamber and in a pocket somewhat above the main chamber. Positive wick feed lubrication is provided for the push rods, and a direct oil feed to the completely enclosed rocker arm shaft. Lubrication of the engine is by means of a combination splash and gravity feed system. A pump delivers the oil under pressure to the oil distributor, which in turn delivers it to pockets above the main and camshaft bearings.

Standpipes are provided in the main bearing mounting bosses to prevent sedimentation and foreign matter entering the bearing. Connecting rods are lubricated by dip, the splash also serving for piston pin and piston lubrication. As mentioned, there is a direct feed from the oil distributor to the rocker arm shaft, and wick feed to the push rods. A vane type pump has been developed for the lubricating system. It is located in the lower crankcase and is driven by a short inclined shaft from the camshaft. The upper end of this shaft, pinned to the pump driveshaft, drives the ignition distributor.

* * *

The Auburn Automobile Co., Auburn, Ind., is introducing a six-cylinder car at $995 and a straight-eight at $1395. The engine in the six-cylinder is an L type Lycoming with 2⅞-inch bore and 4¾-inch stroke. Tax h.p. is 19.84 with a maximum h.p. of 60 at 3200 revolutions. The standard compression ratio is 5.05 to 1 with an optional head obtainable with a ratio of 6.10 to 1.

A single 1¼-inch carburetor is used with vacuum fuel feed. Internal expanding Lockheed hydraulic four-wheel brakes are provided. A compensating cylinder automatically keeps the brakes filled with fluid at all times.

Lubrication is by the Bijur chassis lubrication system which oils 21 points of the chassis. Engine lubrication is by a gear pump which forces to the main bearings, connecting rod, camshaft bearings and the timing case. Normal pressure is 15 pounds with a maximum of 50 pounds.

In the eight-cylinder car the engine is an L type Lycoming with a bore of 2⅞ inches and a stroke of 4¾ inches. Both dual carburetion and dual manifolding are used. With these systems an even supply of gasoline of an even quality is fed into all eight cylinders, one intake manifold supplying the four center cylinders and the other the four end cylinders. Radiator of cellular has a capacity of 5½ gallons. The Dual carburetor is 1¼ inches in size.

Fuel is fed by a pump assuring a steady supply of gas at all speeds. AC gasoline filter keeps all foreign matter from the carburetor. *Tank capacity is 18 gallons.* Four-wheel Lockheed internal expanding hydraulic brakes are provided, with extra compensating cylinder.

Chassis lubrication is by the Bijur lubrication system. By pressing a foot pedal in the front compartment 21 points on the chassis are oiled with metered capacity. Engine lubrication is by a gear pump forcing oil to the main, road and camshaft bearings and the timing case. Normal pressure is 15 pounds; maximum pressure is 50 pounds. A purolator oil cleaner filters all oil before it goes into the pump.

Another Oil Club in Pennsylvania

HARRISBURG, Dec. 6.—Another petroleum club was organized in Pennsylvania when oil jobbers and dealers in Warren, McKean, Potter, Elk and Cameron counties got together Nov. 23 and formed the Oil Field Petroleum Club. Officers are: E. Robinson, Jr., Pavania Oil Co., Warren, president; William F. Crossett, Industrial Oil & Grease Co., Warren, vice-president, and James L. Chapman, Motor Lighthouse Co., Warren, secretary-treasurer.

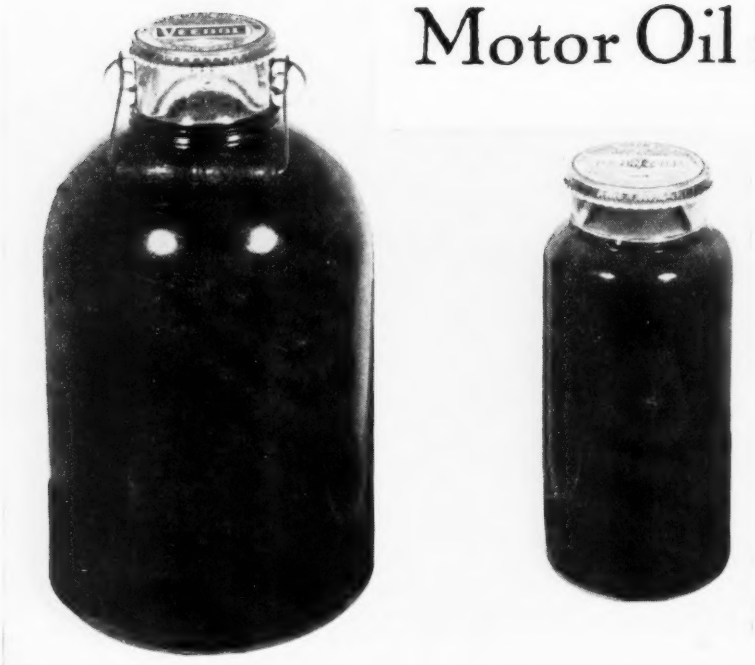
New Detroit Jobber Opens Stations

DETROIT, Mich.—Alsco Service Co., with offices at 523 Murphy bldg., began business on Sept. 29 as a jobber and dealer in gasoline and oil. It has a storage plant at 8484 W. Jefferson st., and it is "opening up service stations right along in Detroit," W. G. Beyer, sales manager says. A. L. Sweet is president and Fred Van Zandt is secretary and treasurer.

NEWARK, N. J., Dec. 7.—Curtis R. Burnett, vice president and secretary of the American Oil & Supply Co., here has been elected a director of the National Newark & Essex Banking Co., to succeed the late Frank B. Adams.

Motor Oil in Sealed Bottles Effects Saving: A New Idea in Merchandising

By Ward K. Halbert
N. P. N. STAFF WRITER



The quart (right) and the gallon (left) bottle have the same sized neck and are sealed with same sized caps. The name of the compounder and his brand, the name of the jobber, the size of the container and the grade of the oil on the cap

INDIANAPOLIS, Dec. 10

NATIONAL brands of motor oil sealed in glass jars of quart and gallon capacities and distributed to dealers at frequent intervals in cases like beer, is an experiment being tried by a recently organized jobbing company in Indianapolis.

Although the company has been operating less than three months, already more than 100 dealer accounts in and about the Indiana capital are handling motor oil in sealed glass containers and the public is getting the habit of buying it that way.

Sam T. Hurd, formerly field secretary of the Indiana Independent Petroleum Marketers' association, is president and general manager of the new company. He calls it the Trade Mark Oil Co., because the whole idea is to merchandise nationally advertised oils under their original brand names, repackaged, by special arrangement with the manufacturers.

Mr. Hurd's plant occupies part of the building formerly occupied by the Home Brewing Co. of Indianapolis, near the geographical center of town. The stub end of a railroad siding is on a trestle, level with the second story of the building. This enables Mr. Hurd to receive motor oils in tank cars, pump to inside storage tanks and carry on the bottling process drawing from storage by gravity.

At present, Veedol and Pennzoil are the nationally advertised lines being handled. Both retail for 30 cents a quart to the consumer. A 25-cent oil is being marketed along with them under the trade name of "Mi-Choice." A third nationally advertised brand will be added to the line but four brands with their several grades will probably complete the line indefinitely.

"It has been my observation that four nationally advertised oils always have the biggest share of the business not controlled by a local brand in any community," Mr. Hurd said. "They are not always the same national brands, but there are seldom more than four and often only three that enjoy popular demand in any one community. We want four oils in our line in Indianapolis but a fifth would be a burden."

Mr. Hurd speaks of his proposition as an experiment. He has persuaded the compounders of Veedol and Pennzoil separately to go along with him on the experiment. And he has proven that the motoring public is pleased with the idea for motorists are constantly expressing themselves favorably to dealers about the bottled oil. His dealers are satisfied too, although their margins are not quite so wide in every case.

The manufacturers get as much for their oil and handle it as easily as if it were being merchandised the old way. The consumer pays no more for it in air tight glass than he would in any other container. The jobber's expense, distributing in bottles and crates, is greater than in drums but there are compensations for the jobber also.

In the final analysis, only four parties are concerned: the consumer, the dealer, the jobber, and the manufacturer. The merchandising plan has some distinct advantages for each of these, as follows:

Cleanliness is the first advantage from the consumer's standpoint. No matter whether the motorist is at home or in a strange community; no matter whether he is in a respectable looking establishment or a hot-dog stand, his favorite oil is in an air

What! Only Fish Sandwiches?

TASTES differ as to food. Therefore the man who operates an eating place has a variety. Even the roadside coffee shop has several kinds of sandwiches. But if he has a filling station in connection with it he may have only one kind of lubricating oil.

Why is that?

The answer is that oils come in 55-gallon drums. A drum costs $35 or $40. The dealer who stocks a large variety of all grades must tie up a lot of money and clutter up a lot of floor space as well. Consequently the motorist does not find what he wants everywhere.

Is there a remedy?

Sam Hurd of Indianapolis thinks he has found the way out. He was a trade association man and has given the petroleum industry much academic study. The accompanying story tells how Mr. Hurd is making variety profitable to the oil retailer.

Sam T. Hurd
President, Trade Mark Oil Co., Indianapolis

tight bottle, genuine and free from dirt.

If the customer is suspicious he can quickly satisfy himself about what he is buying. Even if the bottle has been waiting on a pump island by a dusty road for days, it is all right. Wiped off with a rag the glass shows the oil's natural beauty. The covering is a lithographed tin cap like those on soda-pop bottles, but 2.75 inches in diameter.

The tin caps are put on with machinery. The cap on every bottle carries the trade mark of the company that compounded the oil. The seal is effected at 60 degrees Fahr. with a rubber gasket. They are tamper proof. Without special machinery, it is impossible to remove a cap without destroying it. The machinery is expensive.

Variety and reduced inventory are the chief advantages to the dealer. Each dealer carries the jobber's complete line in stock, on a consignment basis, and enjoys a spread of 10 cents a quart straight through. He exhibits the glass jars in a wooden display rack (outside of the station in summer) and any customer can designate what he wants from the rack.

If a dealer attempted to carry three brands of motor oils in their several grades, buying in 55-gallon drums, his investment in oil would be about $375. By the Hurd system he has no investment in oil at all and his stock may be only one rack full of bottles. When the truck calls daily on the dealer the empty bottles are picked up and replaced with full ones of the same brand and grade. Then the dealer pays cash for the bottles received at 10 cents a quart less than the retail price.

Thus the dealer can use the space 10 drums might occupy for other purposes. The space is approximately 50

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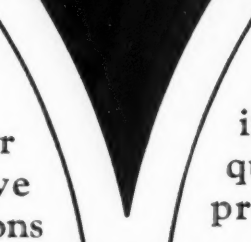

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Display rack for motor oils supplied to filling stations by Trade Mark Oil Co., Indianapolis, carries all the stock a small dealer needs. Most dealers use two or three such racks. Empty bottles are picked up and replaced daily by company truck

square feet. With no investment he has two or three of the national brands that are popular in his community. He has an absolute check on his stock which is impossible when the oil is in drums. He has a more convenient way of handling his oil. And the seal gives him a measure of customer confidence that many small dealers do not enjoy.

"More important than these," Mr. Hurd said, "is the dealer's assured profit. In 55-gallon drums the dealer buys oil by weight or some other absolute measurement. When he returns the drums to the jobber he often returns a gallon and a half of oil. One gallon of 75-cent oil thus lost, raises the cost of the oil he sold by nearly 1.5 cents a gallon."

Most merchandisers of nationally advertised oils have three standard contracts to offer their dealers. For an example, a well-known motor oil is made in four grades. Buying one drum at a time a dealer pays 72 cents for the lightest grade and 75 cents for the heaviest.

Buying 10 drums at once the dealer pays 71 cents for the lightest and 74 cents for the heaviest, a price concession of 1 cent a gallon. However, if he buys 25 drums at once he gets another 1-cent concession, paying 70 cents a gallon for the lightest grade and 73 cents for the heaviest.

If a dealer thinks he is big enough to swing a 25-drum order he is often tempted to over-buy. In so doing he ties up approximately $975 in oils. He uses valuable space for storage and in the end may carry over two or three drums of winter oil for a whole season.

A drum of this winter oil (cost 73 cents a gallon) represents an idle investment of upwards of $40. The interest on that for a year at 6 per cent is $2.40 or 4 cents a gallon cost to carry it over from one season to the next.

Mr. Hurd does not argue that his system eliminates these losses entirely, but that they are removed entirely from the dealer's proposition. The entire carrying charge is on the jobber according to the Hurd system, and oil that sticks to container walls represents no loss to the retailer.

Of course dealers do not have to buy in 55-gallon drums. A great many distributors and compounders have arranged for them to buy in smaller packages, even 15-gallon drums. But in small drums the cost per gallon of the oil advances. The grade of oil just mentioned would advance in price to 81.5 cents a gallon, which is more than the price in bottles.

As mentioned before, retailers of bottled oil get 10 cents a quart straight through. A 30-cent oil costs the dealer 20 cents a quart or 80 cents a gallon.

From the standpoint of the jobber, the Trade Mark Oil Co., the advantage lies largely in the ease of merchandising. It is very little trouble to show a dealer the advantage of having a variety of nationally advertised motor oils in stock without any initial investment, on a pay-as-you-go basis.

Moreover the jobber is entirely relieved of the trouble and expense of building up a popular demand for his products. The manufacturers of trade marked oils already have advertised them in national publications. They have already built up consumer acceptance and popular demand for them.

The smallest and most obscure dealer can afford to pay cash for his oil stock replenishments, day by day. And this saves the jobber from credit losses and wrangles in efforts to col-

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"Giving" an option to buy at a price determined after careful inspection and study of the property values is at times justified.

"Giving" an option simply because the price named is attractive has many elements of danger.

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NATIONAL PETROLEUM NEWS
700 Penton Bldg.
Cleveland, Ohio

lect from small dealers. Although the jobber is a car load buyer and enjoys the best price the manufacturer has, he receives almost the top dealer's price. This gives him a wide spread to offset the cost of re-packaging and distribution.

Frequent calls keep the jobber in constant contact with his dealers. Mr. Hurd points out that this contact alone would be worth a great deal to a jobber who also was marketing gasoline and other petroleum products. The Trade Mark Oil Co. is exclusively in the motor oil business.

Although the manufacturer gets no more and no less from the jobber for his oil than he would from any other carload buyer, the bottling system has advantages from the refiner's viewpoint. The principal one is an increased distribution, i. e., through a larger number of dealers. Thus he makes the oil more accessible for which he has built up a demand through advertising. This distribution is gained without any additional sales expense.

Another advantage to the refiner is that the retail outlets, through which his branded products are sold, are not jointly controlled. Although large compounders can get quick distribution in any given community by arranging to distribute through the stations of the leading Independent jobber in that community, it has its hazards. The leading Independent may sell his business to a major company and the compounder is thus wiped out of the community over night without any compensation at all.

The "substitution specter" of which all of the compounders of nationally advertised motor oils profess to be afraid, is almost eliminated from the picture by the sealed glass container, Mr. Hurd pointed out.

"The dealer or filling station attendant who sells a customer a famous brand of motor oil and then proceeds to deliver a cheap imitation of it into the customer's crank case, is doing so for profit," he said, "and in the use of sealed bottles, the practice ceases to be profitable.

"Properly to merchandise oil in glass jars, the salesman at the service station or the workman at a garage should show the customer the unbroken package. The bottle is plain and without distinguishing mark, but the lithographed cap tells everything. It carries the name of the Trade Mark Oil Co., and it also carries the name of the oil together with the manufacturer's trade name and trade mark.

"In a white diamond shaped space on the cap the grade of the oil is identified by the word 'Light', 'Medium' or 'Heavy', or by S. A. E. viscosity number.

"The attendant carries a bottle opener in his pocket. With the opener furnished by the company the cap may be removed easily but not without punching a hole in the middle of it. With any improvised opener the cap can be removed but it will be hopelessly mutilated.

"The cap can be removed and the glass jar emptied in the customer's presence, conveniently. Without the cap the bottle is only a container, with size and contents not shown. Sealed, the bottle meets all legal requirements. Open, it is not a legal package in which to sell oil. So it should be first sold and then opened."

Small retailers have expressed themselves most favorably to the proposition. "It saves me so much figuring," one dealer said. "When the truck comes, I can look at the display rack and tell what I need. If there are nine quarts empty I have earned 90 cents for myself."

"But your margin is not so wide," it was suggested.

"That's true," he said, "but I make just as much money. Nobody can keep his oil money separate from his other cash so he can always have enough on hand when a drum gets empty to buy another one. It used to be when I needed oil I had to scratch for the money. It was an awful bother."

The proprietress of a wayside establishment, a combination refectory and filling station, stated that she soiled just half as many aprons in a day, after starting to sell oil in sealed glass containers.

"I used to get so dirty and kill so much time, running back and forth to the basement for oil," she said.

A MOTORIST in Indianapolis recently asked Mr. Hurd's permission to make up a case to fit under the seat of an automobile and contain four sealed quarts. Permission was granted, of course. The bottles are handled exactly like milk bottles. Dealers pay 5 cents a quart for the glass they sell, lose or break. Later if they get the bottles back they may turn them in at 5 cents a quart—20 cents for a gallon jar.

"I was greatly surprised by two things in the first 60 days I was in business," Mr. Hurd said. "I thought more than half my sales would be of 25-cent oil, and they are not. And I thought more than half my sales would be in quart bottles, and they are not.

"This convinces me that half the oil bought by the average motorist is for crank case changes. Very few people are operating their first automobile now. Most of us have ruined one or two by neglecting them and now we are taking better care of them. We are changing oil oftener and we are using more expensive oils."

Mr. Hurd says he could have expanded the marketing of his products much more rapidly if he had tried, but knowing how new and revolutionary his idea was he preferred to "go easy" and work out the details as he

went, avoiding as many costly mistakes as possible.

He designed the wooden display rack to show off the color of the oil which the compounders have spent so much time and money to develop, purely as a merchandising expedient. He also designed the shipping cases to hold 12 quart, or 4 gallon containers, these to be loaded in a flat bed truck such as usually are used in carrying bottled goods.

The Owens Bottle Co., Toledo, O., developed the special bottles, (quarts and gallons with openings the same size) and also the caps and a capping machine capable of sealing 60 containers a minute. This speed can be improved as soon as the need justifies it.

The bottle cleaning equipment in Mr. Hurd's plant is fast and simple. Oil bottles are soaked in a chemical solution, washed with soap on a revolving brush that is driven by an electric motor, and rinsed. They are always allowed to dry bottom up for several days before they are used again. Breakage is inconsequential.

Mr. Hurd's force is small. It consists of three persons besides himself. The first is a salesman who also drives the company's truck. Second is a colored boy who works in the warehouse, and the third is a colored girl who washes bottles. She is only a part-time employe.

"Here is one indication that the idea is sound," Mr. Hurd said. "We can all remember when all manner of merchandise was sold from bags, bins and barrels. Now practically every item in the old general store that can withstand light has gone into glass. It is the glass package age. But oil, unlike the others, does not advance in price as a result of going into the glass package. The economies pay for the service.

"It has not been long since the distribution of milk was a crude process, unclean and dangerous to the human machine. The solution to that problem was the glass package. When it was started, all the problems of distributing and cleaning bottles loomed up as almost insurmountable obstacles. But the necessity was great. Time and ingenuity found a way. Now we have a highly developed system of milk distribution to which the glass bottle is a mere incidental."

Mr. Hurd told of a well located garage in Indianapolis which his salesman hesitated to approach at first. Here is what happened: "The garage owners took on the Trade Mark Oil Co.'s system as soon as they saw it. The first net economy to the garage was a saving of $17 a year on insurance. Then as soon as all the drums were moved from the corner of the garage it was obvious that there was room to store two more automobiles. The two new customers net the garage $25 a month."

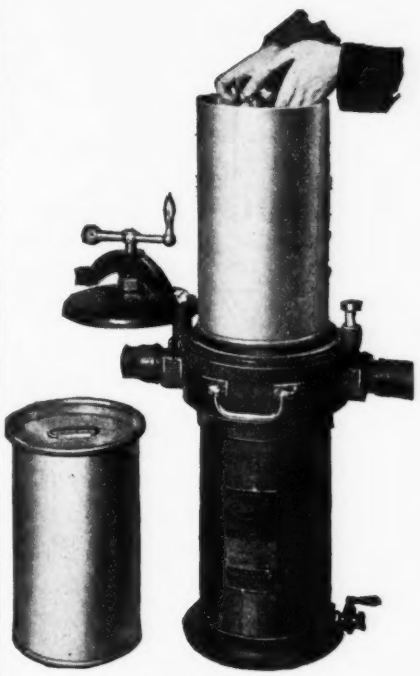
For Oil Fires

You can recharge this Phomene Accumulator in less than a minute

THE illustration below shows how simple it is to recharge the Phomene (foam type) Accumulator, Model 401.

This fact is of utmost importance as speed in recharging means speed in conquering an oil fire.

The Phomene Accumulator is efficient in extinguishing oil fires in both refineries and bulk filling stations. It is the *oil man's* ideal fire equipment.



MODEL 401

Phomene Accumulator, Model 401, gives 380 gallons of foam from a single charge. Rate of discharge, 200 gallons a minute. Takes less than a minute to recharge.

Note how the head swings to one side to give clear access to inside of Accumulator. Special powder containers are slipped in or pulled out with one movement.

The Phomene (foam type) Accumulator is one of the many types of extinguishers made by Pyrene Mfg. Co. Write for a copy of "What Price Nightmare?". It tells you how to get complete fire protection.

Pyrene Fire Equipment (except Accumulators) is sold through Auto Accessory, Hardware, Mill Supply and Oil Well Supply jobbers and retailers.

Listed as standard by Underwriters' Laboratories. Approved by Factory Mutual Laboratories and Steamboat Inspection Service.

PYRENE MFG. COMPANY
NEWARK, NEW JERSEY

Branches:
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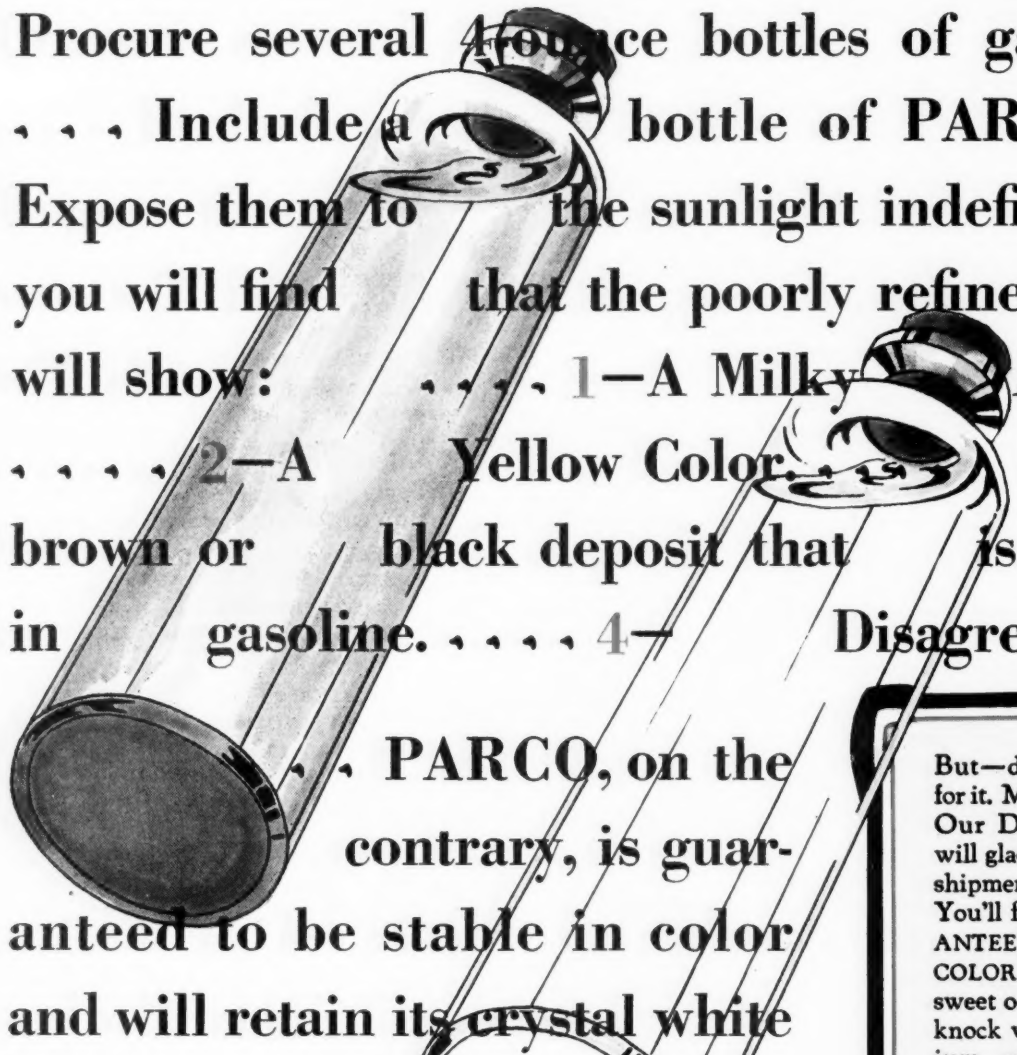
The price of the book is $10. Just send us your check and we will mail a copy of it to you.

National Petroleum News, 1213 W. Third St., Cleveland, Ohio

COLOR STABILITY

MAKE THIS TEST YOURSELF

Procure several 4-ounce bottles of gasoline . . . . . Include a bottle of PARCO . . . . . Expose them to the sunlight indefinitely and you will find that the poorly refined gasoline will show: . . . . 1—A Milky Appearance. . . . . 2—A Yellow Color. . . . 3—Yellow, brown or black deposit that is not soluble in gasoline. . . . . 4—Disagreeable Odor.



. . PARCO, on the contrary, is guaranteed to be stable in color and will retain its crystal white color and sweet odor indefinitely without the slightest trace of any deposit whatever.

But—don't take our word for it. Make the test yourself. Our Division Sales offices will gladly supply you with a shipment sample of PARCO. You'll find PARCO'S GUARANTEED CRYSTAL WHITE COLOR entirely stable, its sweet odor constant, its anti-knock value high—a premium motor fuel without premium price.

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Our modern Refinery at Parco was built to advantageously supply Northwest jobbers. . . . . Our Refining Facilities at West Tulsa and Blackwell mean advantageous freight rates for Southwest and Central States jobbers.

PARCO

GASOLINE

Seasonably Volatile . . . Anti-knock

PARCO PETROLEUM PRODUCTS

New Stations Building

St. Paul, Minn.—Phillips Petroleum Co., filling station.
St. Paul, Minn.—M. J. O'Neill, filling station.
Nebraska City, Neb.—W. W. Sem, filling station.
Grand Forks, N. D.—A. T. Skarsbo, filling station.
Lincoln, Neb.—State Oil Co., filling station.
Morrison, Ia.—Standard Oil Co. of Indiana, filling station.
E. Cleveland, O.—Shell Petroleum Corp., filling station.
New Bremen, O.—Charles Block, filling station.
Sommerville, Tex.—Joe Baker, filling station.
Massillon, O.—Al Tissot, filling station.
Dallas, Tex.—John C. Thompson, filling station.
Dallas, Tex.—Parks Bennett, filling station.
Burlington Junction, Mo.—O. F. Schooler, filling station.
Greenfield, Mo.—Johnnie Brooking, filling station.
El Reno, Okla.—High Test Oil Corp., filling station.
Santa Fe, N. Mex.—Phillips Petroleum Co., filling station.
Canton, O.—Heingartner & Gill, Inc., filling station.
Pecos, Tex.—Pasotex Petroleum Co., several filling stations.
Houston, Tex.—W. C. Munn, filling station.
Emporia, Kans.—Phillips Petroleum Co., filling station.
Fort Smith, Ark.—F. L. Coulter, filling station.
San Antonio, Tex.—Flores Garage Co., filling station.
Tampa, Fla.—T. E. Lucas, filling station.
Dallas, Tex.—L. F. Crawford, filling station.
Rolla, Mo.—The Texas Co., filling station.
New Orleans, La.—J. Van Vrancken, filling station.
Jefferson City, Mo.—Capital City Oil Co., filling station.
Jamestown, Ky.—The Carnahan Oil & Refining Co., filling station.
Concord, Ky.—Gulf Refining Oil Co., filling station.
Columbia, S. C.—Standard Oil Co. of New Jersey, filling station.
Columbus, Ga.—A. M. Aderhold, filling station.
Norwalk, Conn.—The Texas Co., filling station.
Everett, Wash.—Standard Oil Co. of California filling station.
Jacksonville, Fla.—Pan-American Petroleum & Transport Corp., filling station.
Rochester, N. Y.—Standard Oil Co. of New York, filling station.
Butte, Mont.—Wm. Lowney & L. Williams, super-service station.
Derry, N. H.—New England Oil Co., filling station.
Jamaica, N. Y.—James Macbeth, filling station.
Ponchatoula, La.—Liberty Products Co., filling station.
Fairmont, W. Va.—Sinclair Refining Co., filling station.
Mayfield, Ky.—Gulf Oil Co., filling station.
Baraboo, Wis.—Pennsylvania Oil Co., filling station.
San Juan Capistrano, Calif.—Richfield Oil Co., filling station.
York, Pa.—Thomas Shipley, filling station.
Gonzales, Tex.—Ross Boothe, filling station.
Elk City, Okla.—Phillips Petroleum Co., filling station.
Georgetown, O.—Cinco Oil Co., filling station.
Williamsport, Pa.—Troy Oil Co., filling station.
Newark, N. J.—Bisogno & Luchetti, filling station.
Howell, Mich.—McPherson Oil Co., filling station.
Spokane, Wash.—Associated Oil Co., filling station.
New Bedford, Mass.—The Texas Co., filling station.
Leominster, Mass.—J. G. Peterson, filling station.
Roanoke, Ala.—E. R. Taylor, filling station.
Fremont, Neb.—Reynolds Bros., filling station.
Perryton, Tex.—Phillips Petroleum Co., filling station.
White Plains, N. Y.—David H. Moses, filling station.

Note: Material used in this column is principally taken from newspapers. NATIONAL PETROLEUM NEWS *assumes no responsibility for its accuracy.*

New Publications

A REVISION of the "Handbook of Domestic Oil Heating" has just been published by the American Oil Burner Association, 342 Madison Avenue, New York. This book is a practical text and reference book on home heating and is regarded by the domestic oil heating industry as its "Bible."

The book, which is edited by Henry F. Tapp, contains 383 pages with 55 tables and 153 illustrations. It is the first revision of the handbook in two years. All obsolete material has been eliminated and a great deal of new data added.

The editor has carefully defined and explained the words, phrases and terms in heating and ventilating practice, in oil technology, and in oil burning, so that even those most unfamiliar with these subjects will be able to read the book with understanding. This clarity of exposition is a feature of the whole book.

Whether it is discussing radio "interference" and oil burner operation or describing and analyzing the different types of oil burners and controls, there are pictures, tables and charts to make the explanation quickly intelligible.

The editor has assembled in quickly available form all of the facts about petroleum that may be of practical use—production figures, methods of recovery, distilling and refining, pumps and storage, and characteristics and properties of fuel oil. There is a detailed discussion of fuel oil combustion and the principles upon which modern oil heating equipment is built.

The handbook is offered in a 4-inch by 7-inch flexible binding, and the text is printed on India paper. It easily fits into one's side coat pocket. Its price is $3.

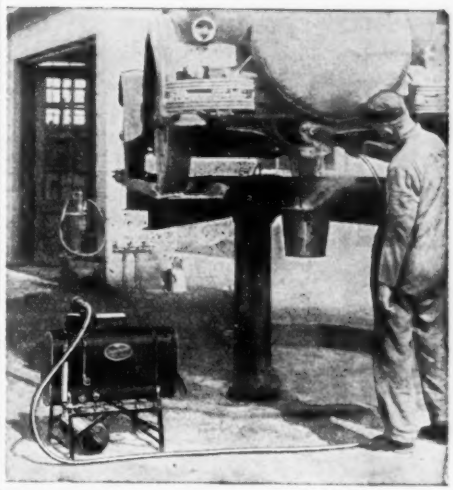
Erie Meter System, Inc., Erie, Pa., announces the new "Conquerer" meter gasoline pumps, either electric, hand and electric, or air operated. The company gives seven reasons for investing in this new pump, among those reasons being its quiet operation, the strong durable cabinets, leak prevention by minimum piping in the pump, economy in operation and installation, insurance of long service, and the large dial meters which permit better visibility.

The bulletin also describes and illustrates the Erie tandem style meter pumps and the pumps with 10-inch dial meters.

Give Your Customers a REAL Greasing Job!

The LIGHTNING LIQUEFIER

assures complete removal. It makes cold congealed grease flow like water.



Hot steam quickly reduces the thick grease a to light, flowing oil

When you change grease for them, why not remove all the old grease that clings within gears and casings—give them a complete change the Lightning way. Heat from a continuous supply of hot steam when entering transmission and differential cases readily converts the hard cold grease into a free flowing oil. Not only is it speedily done, but also a thorough job is accomplished—even to washing out with the old grease all of the dirt, metal chips, etc., which may be in the housing.

The LIGHTNING LIQUEFIER

LIGHT — PORTABLE

The **"Lightning"** is a light, portable outfit which generates steam at a very low pressure but in large volume. The steam completely fills the housing and acts on the grease between the gears and throughout the entire housing.

An inspection after steaming will show the gears and inside of the housing to be as clean as though washed in gasoline.

The **"Lightning"** is simple, always ready, and any workman can operate it,—so reasonable in price that every station can profitably have one.

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Gasoline
Light Fuel
Oil City E
600 Steam Refined

Guaranteed 100% PURE PENNSYLVANIA OIL
Permit No. 26

Neutrals
Warren E
Warren D
650 Steam Refined

Swan-Finch 100% Pennsylvania Motor Oils are compounded to any specification, and shipped in bulk or drums either to you or direct to your customers. Ask us for quotations on your requirements.

SWAN-FINCH REFINING CO. 205 E. 42nd St., New York

SWAN FINCH

100% Pennsylvania Oils

SALES THAT WOULD HAVE GONE ELSEWHERE

The cash customer buys gas and oil where he pleases, but the coupon book customer concentrates his purchases in your stations. He looks for your sign—rarely buys competitive products. He buys in larger quantities.
Sell him a coupon book and reap the profit from these steady, bigger-buying customers.
Write us for complete information, samples and prices. *Accuracy since 1888.*

ALLISON COUPON COMPANY
INDIANAPOLIS, INDIANA

PLANNING NEW STATIONS

THIS is station-planning time. Blueprints are scanned—options are taken—new equipment is considered. And in importance, next to the location itself, is the tanks in which you will store your precious liquids. Just remember "Youngstown" when buying time arrives.

Write for Bulletin No. 15

THE YOUNGSTOWN BOILER & TANK COMPANY
YOUNGSTOWN—OHIO

Offices in Principal Cities

Youngstown TANKS
"KEENE STANDARDIZED MADE"

Super Service Stations

In 32 articles since the first of this year *National Petroleum News* has told how to build and operate super service stations profitably—what they sell and how to sell it—

Here are the 32 articles in the past 48 issues:

1928

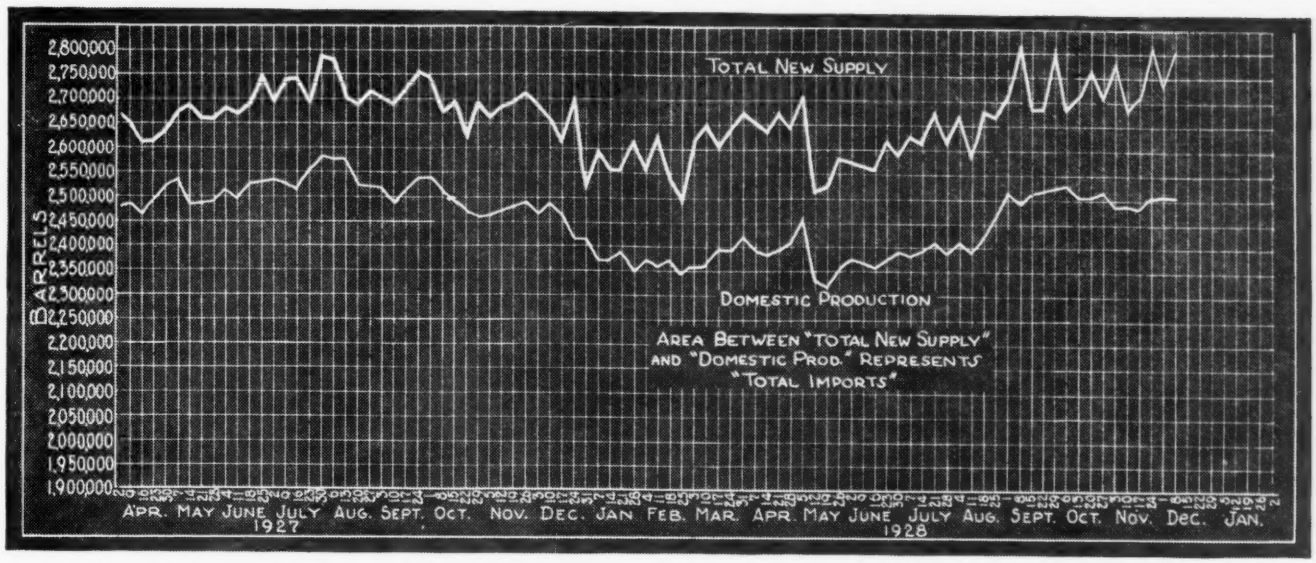
Pay toilets are means of financing rest rooms Nov. 14, p. 100
Gasoline stations of the future Nov. 14, p. 27
Salesmanship at service stations Oct. 17, p. 38
Super station owner calls customers by first name Oct. 17, p. 195
Auto department stores for 200 cities Oct. 3, p. 17
Opens super service station at Omaha Sept. 26, p. 64
Humble designs fireproof stations Sept. 26, p. 25
Free serve self car wash brings paid service respect Sept. 12, p. 89
Chain stations de luxe in California Aug. 22, p. 25
Central locations best for super stations Aug. 15, p. 80
Bus terminal boosts sales Aug. 1, p. 20
Camp in scenic region draws tourists July 25, p. 68
Everything for the car on one lot July 25, p. 83
Station reclaims desert in California July 18, p. 84
Elaborate station opened in Tulsa July 18, p. 94
Brake tester added to super station July 4, p. 101
Tourist camp increases gallonage June 27, p. 27
Cuba has first super service station June 13, p. 84
Determining successful stations June 6, p. 29; May 9, p. 67; Apr. 25, p. 27; Apr. 18, p. 29
Super station solves parking problem May 30, p. 26
California station patterned after mosque Apr. 18, p. 93
Super stations favored more in city Apr. 11, p. 121
Individually owned super stations thrive best March 14, p. 97
Leasing super stations to individuals March 14, p. 113
Builds airplane and auto station March 7, p. 104
Profitable business in company stations March 7, p. 17
Artistic station has variety of services Feb. 29, p. 85
Chain store methods in selling gasoline Jan. 25, p. 27
England builds drive-in stations Jan. 4, p. 88

Back copies of any of the above issues are 25c a copy. On issues that are exhausted, photostats will be furnished at 40c per page.

Libraries in the larger cities generally keep back files of *National Petroleum News* complete.

National Petroleum News
Main Office: 1213 West Third Street
Cleveland, Ohio

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below as compiled by American Petroleum Institute

PRODUCTION SUMMARY

	Dec. 8	Dec. 1
Production east of Rockies	1,841,250	1,829,350
Increase		11,900
Total production in U. S.	2,520,850	2,506,150
Increase		14,700
Crude oil imports	285,000	228,857
Increase		56,143
Total crude supply	2,805,850	2,735,007
Increase		70.843

OKLAHOMA

	Dec. 8	Dec. 1
North Braman	2,700	2,700
South Braman	1,300	1,350
Blackwell	3,300	3,050
Hubbard	2,300	2,350
Thomas	1,100	1,100
Tonkawa	11,750	11,750
Garber	7,050	7,100
Burbank	25,050	25,300
Ostage, outside Burbank	25,950	26,000
Cushing	20,000	20,000
Yale Jennings	7,650	7,650
Davenport	1,650	1,650
Bristow-Slick	20,150	20,200
North Okmulgee	14,400	14,400
Pearson	1,950	1,900
Lyons-Deaner	4,250	4,250
St. Louis	128,150	132,150
Allen Dome	26,450	24,900
Cromwell	8,050	8,150
Papoose	4,000	4,000
Wewoka	5,400	5,400
Seminole	41,600	40,900
Bowlegs	48,100	48,900
Searight	10,400	10,150
Little River	95,600	100,650
Earlsboro	76,200	75,300
Duncan District	7,750	7,750
Graham	4,750	4,750
Fox	1,600	1,600
Healdton	13,650	13,700
Hewitt	9,000	9,000
Scholem Alechem	14,350	14,500
Others	59,700	56,050
Total, Oklahoma	705,300	708,600
Decrease		3,300

KANSAS

	Dec. 8	Dec. 1
Greenwood County	25,300	25,500
Florence-Covert	1,000	1,000
Peabody-Elbing	3,250	3,250
Eldorado-Towanda	12,900	12,900
Augusta-Fox-Bush	3,250	3,200
Rainbow Bend	1,250	1,300
Russell	3,700	4,000
Churchill	8,150	7,700
Oxford	7,450	7,100
Others	31,700	31,300
Total, Kansas	97,950	97,250
Increase		700

NORTH LOUISIANA

	Dec. 8	Dec. 1
Homer	4,100	4,100
Haynesville	5,650	5,800
Caddo, light	9,150	9,350
Caddo, heavy	2,950	2,950
De Soto, Red River	4,100	4,150
Elm Grove	600	600
Bellevue	850	850
Cotton Valley	3,800	3,850
Urania	6,050	6,050
Pleasant Hill	500	500
Total, North Louisiana	37,750	38,200
Decrease		450

ARKANSAS

	Dec. 8	Dec. 1
El Dorado	4,950	4,950
Champagnolle	14,150	12,250
Smackover, light	7,150	7,150
Smackover, heavy	53,650	53,650
Stephens	1,000	1,000
Nevada	1,250	1,300
Lisbon	1,700	1,700
Others	100	100
Total, Arkansas	83,950	82,100
Increase		1,850

TEXAS (Outside Gulf Coast)

Panhandle District

	Dec. 8	Dec. 1
Hutchinson County	28,000	28,100
Carson County	6,000	6,100
Gray County	24,350	23,900
Wheeler County	800	800
Others	3,450	2,700
Total, Panhandle District	62,600	61,600
Increase		1,000

North Texas

	Dec. 8	Dec. 1
Burkburnett	10,000	9,950
Electra	12,950	12,800
Iowa Park and K-M-A	3,900	3,850
Wilbarger	33,100	32,650
Archer County	19,150	19,250
Montague-Cooke	9,950	10,050
Others	600	600
Total, North Texas	89,650	89,150
Increase		500

TEXAS (Outside Gulf Coast)

	Dec. 8	Dec. 1
Stephens County	7,600	7,550
Eastland-Desdemona	7,050	6,950
Brown County	10,250	10,150
Coleman County	4,100	3,900
Callahan County	3,900	3,850
Shackleford County	10,400	10,550
Young County	8,550	8,750
Throckmorton County	800	800
Palo Pinto County	350	350
Jack County	1,300	1,300
Others	700	700
Total, West Central Texas	55,000	54,850
Increase		150

West Texas

	Dec. 8	Dec. 1
Jones County	6,650	5,000
Mitchell and Scurry Counties	2,700	2,750
Howard County	36,600	33,000
Reagan County	17,050	17,200
Crane and Upton Counties	52,650	54,000
Crockett County	2,750	2,850
Pecos County	71,300	70,400
Winkler County	146,900	141,200
Others	1,700	1,450
Total, West Texas	338,300	327,850
Increase		10,450

East Central Texas

	Dec. 8	Dec. 1
Mexia	6,300	6,350
Currie	500	500
Richland	500	500
Wortham	1,500	1,500
Corsicana-Powell	9,900	10,000
Boggy Creek	2,850	1,700
Nigger Creek	700	700
Total, East Central Texas	22,250	21,250
Increase		1,000

Southwest Texas

	Dec. 8	Dec. 1
Luling	13,400	13,500
Lytton Springs	1,100	1,150
Somerset	700	700
Laredo District	9,550	8,950
Dale	850	850
Salt Flat	4,400	2,300
Others	950	800
Total, Southwest Texas	30,950	28,250
Increase		2,700
Total, Texas (Outside Gulf Coast)	598,750	582,950
Increase		15,800

GULF COAST

Coastal Texas

	Dec. 8	Dec. 1
West Columbia	7,650	8,000
Damon Mound	1,000	1,000
Big Creek	1,900	1,800
Boling	2,800	2,900
Blue Ridge	5,000	5,700
Pierce Junction	10,100	10,650
Humble	3,750	3,750
Goose Creek	6,600	6,750
South Liberty	5,650	6,900
Hull	10,550	10,750
Saratoga	950	950
Batson	1,350	1,350
Barber's Hill	500	650
Sour Lake	3,200	3,000
Spindletop	36,450	35,500
Orange County	3,300	3,450
Sugarland	4,800	4,806
Others	3,950	2,850
Total, Coastal Texas	109,500	109,750
Decrease		250

Coastal Louisiana

	Dec. 8	Dec. 1
Vinton	4,050	4,200
Sulphur Dome	3,600	4,000
Lockport	3,900	3,900
Sweet Lake	1,400	1,350
Evangeline	900	900
East Hackberry	5,300	5,250
Edgerly	800	800
Sorrento Dome	1,500	550
Others	1,450	1,450
Total, Coastal Louisiana	22,900	22,400
Increase		500
Total, Gulf Coast	132,400	132,150
Increase		250

ROCKY MOUNTAIN

Wyoming

	Dec. 8	Dec. 1
Salt Creek	29,750	35,400
Grass Creek	2,350	2,350
Elk Basin	1,000	1,000
Big Muddy	2,550	2,550
Lost Soldier	3,650	3,650
Rock Creek	2,250	2,500
Lance Creek	350	350
Oregon Basin	3,500	3,500
Others	5,500	5,500
Total, Wyoming	50,900	56,800
Decrease		5,900

Montana

	Dec. 8	Dec. 1
Cat Creek	1,500	1,500
Sunburst	7,950	7,950
Pondera	1,400	2,000
Others	100	100
Total, Montana	10,950	11,550
Decrease		600

Colorado

	Dec. 8	Dec. 1
Moffat (Craig)	1,150	1,250
Fort Collins	2,050	2,250
Florence	1,350	1,250
Others	2,350	2,300
Total, Colorado	6,900	7,050
Decrease		150

New Mexico

	Dec. 8	Dec. 1
Table Mesa	100	
Hogback	550	500
Artesia	1,050	1,050
Rattlesnake	2,600	1,050
Others	100	100
Total, New Mexico	4,400	2,700
Increase		1,700
Total, Rocky Mountain	73,150	78,100
Decrease		4,950

CALIFORNIA

	Dec. 8	Dec. 1
Santa Fe Springs	76,500	70,500
Long Beach	190,000	192,000
Huntington Beach	50,500	51,000
Torrance	16,000	16,000
Dominguez	10,000	10,000
Rosecrans	6,500	6,500
Inglewood	27,500	27,800
Midway-Sunset	75,000	75,000
Ventura Avenue	52,000	52,000
Seal Beach	28,500	28,500
Others	147,000	147,500
Total, California	679,600	676,800
Increase		2,800

EASTERN

	Dec. 8	Dec. 1
(Including Ill., Ind., Ky., Ohio, W. Va., Pa., and N. Y.)	112,000	110,000
Increase		2,000

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended December 7 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	North La.-Ark.	Total Week Ended Dec. 7	Total Week Ended Nov. 9
Plants Reporting	12	29	28	12	81	81
Da. Av. Cap. (bbls.)	92,000	160,200	125,100	54,900	432,200	432,200
Da. Cracking Capacity	30,700	52,600	17,200	22,700	123,200	123,200
Da. Av. Crude Runs	59,054 — 6.1	93,716 — 8.1	83,275 — 5.7	54,420 — 9.7	290,465 — 7.3	320,381
Da. Av. Other Oils	7,854 — 1.2	4,857 — 43.2	6,027 + 44.4	3,290 + 31.9	22,028 — 4.9	20,859
GASOLINE—Gallons						
Stocks, Nov. 30	11,734,000	36,591,000	22,499,000	6,724,000	77,548,000	61,888,000
Prod. 11-30 to 12-7	9,585,000 + 0.5	14,934,000 — 12.1	9,207,000 — 7.1	6,093,000 — 9.5	39,819,000 — 7.7	42,435,000
Ship. 11-30 to 12-7	8,387,000 + 0.5	14,817,000 — 1.9	8,999,000 — 0.5	5,996,000 — 6.1	38,199,000 — 1.7	39,659,000
Stocks, Dec. 7	12,932,000 + 10.2	36,708,000 + 0.3	22,707,000 + 0.9	6,821,000 + 1.4	79,168,000 + 2.1	63,664,000
Ratio Sales to Prod	87.5%	99.2%	97.7%	98.4%	95.9%	93.5%
KEROSENE—Gallons						
Stocks, Nov. 30	8,091,000	5,774,000	1,816,000	346,000	16,027,000	15,641,000
Prod. 11-30 to 12-7	1,702,000 — 17.9	2,037,000 — 8.4	1,868,000 + 15.7	292,000 — 33.5	5,899,000 — 7.1	6,480,000
Ship. 11-30 to 12-7	1,868,000 — 9.2	2,244,000 + 17.1	1,701,000 — 26.2	299,000 — 42.2	6,112,000 — 10.1	5,885,000
Stocks, Dec. 7	7,925,000 — 2.1	5,567,000 — 3.6	1,983,000 + 9.2	339,000 — 2.0	15,814,000 — 1.3	16,236,000
Ratio Sales to Prod	109.8%	110.2%	91.1%	102.4%	1039.6%	90.8%
STOVE DISTILLATE—Gallons						
Stocks, Nov. 30	2,083,000	3,689,000	454,000	35,000	6,261,000	7,225,000
Prod. 11-30 to 12-7	191,000 — 18.7	530,000 — 21.1	277,000 + 17.4	103,000 — 1.0	1,101,000 — 11.7	1,050,000
Ship. 11-30 to 12-7	253,000 + 75.7	1,136,000 + 43.8	110,000 — 55.1	98,000 — 8.4	1,597,000 + 24.2	1,826,000
Stocks, Dec. 7	2,021,000 — 3.0	3,083,000 — 16.4	621,000 + 36.8	40,000 + 14.3	5,765,000 — 7.9	6,449,000
Ratio Sales to Prod	132.5%	214.3%	39.7%	95.1%	145.0%	173.9%
GAS OIL—Gallons						
Stocks, Nov. 30	5,963,000	30,011,000	13,070,000	5,987,000	55,031,000	58,391,000
Prod. 11-30 to 12-7	1,509,000 + 4.2	2,118,000 + 5.2	1,627,000 — 36.4	2,354,000 + 9.5	7,608,000 — 6.9	5,872,000
Ship. 11-30 to 12-7	1,865,000 + 40.3	2,964,000 — 35.8	1,122,000 — 39.0	2,348,000 + 2.9	8,299,000 — 17.5	7,975,000
Stocks, Dec. 7	5,607,000 — 6.0	29,165,000 — 2.8	13,575,000 + 3.9	5,993,000 + 0.1	54,340,000 — 1.3	56,288,000
Ratio Sales to Prod	123.6%	139.9%	69.0%	99.7%	109.1%	135.8%
FUEL OIL—Gallons						
Stocks, Nov. 30	28,158,000	56,008,000	69,290,000	22,456,000	175,912,000	186,403,000
Prod. 11-30 to 12-7	5,606,000 — 13.1	5,181,000 — 28.9	11,092,000 + 2.7	8,732,000 — 2.7	30,611,000 — 8.7	31,848,000
Ship. 11-30 to 12-7	6,258,000 — 3.2	7,939,000 + 3.8	13,125,000 + 6.3	9,629,000 — 3.9	36,951,000 + 3.4	29,078,000
Stocks, Dec. 7	27,506,000 — 2.3	53,250,000 — 4.9	67,257,000 — 2.9	21,559,000 — 4.0	169,572,000 — 3.6	189,173,000
Ratio Sales to Prod	111.6%	153.2%	118.3%	110.3%	120.7%	91.3%

Gasoline Produced by Various Methods, Week Ended December 7

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	6,062,000	63.2	9,071,000	60.7	7,566,000	82.2	2,778,000	45.6	25,477,000	64.0
Cracked	2,862,000	29.9	5,152,000	34.5	1,324,000	14.4	2,851,000	46.8	12,189,000	30.6
Natural	661,000	6.9	711,000	4.8	317,000	3.4	464,000	7.6	2,153,000	5.4
Total	9,585,000		14,934,000		9,207,000		6,093,000		39,819,000	

Note:—Due to typographical error, fuel oil stocks for Nov. 23 in the table on page 140 of Dec. 5 issue, were given at 70,835 gallons. This figure should have been 70,835,000 gals.

+ or — columns are % change from previous week.

Mid-Continent Still Runs Are Curtailed

Staff Special—By Telegraph

TULSA, Dec. 11

CRUDE runs at 81 Mid-Continent refineries were reduced 23,000 barrels daily average the first week of December, according to reports to NATIONAL PETROLEUM NEWS. Crude charges averaged 290,465 barrels a day which was the lowest volume of runs since the middle of last April. Charges of partly refined oils to stills were reduced approximately 1,000 barrels daily average to 22,028 barrels a day.

As a result of the lower rate of manufacture refiners drew on stocks of all principal products except gasoline. The increase in gasoline stocks was well below the normal for this season and was the smallest increase reported since the week ended Oct. 5. The largest reduction in stocks was made in fuel oil.

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Dec. 7. Change in stocks figured from Nov. 9.

	Gallons
GASOLINE	
Production	167,886,000
Shipments	152,382,000
Net change in stocks	+15,504,000
Ratio sales to production	90.8%
KEROSENE	
Production	24,491,000
Shipments	24,913,000
Net change in stocks	—422,000
Ratio sales to production	101.7%
STOVE DISTILLATE	
Production	4,675,000
Shipments	5,359,000
Net change in stocks	—684,000
Ratio sales to production	114.6%
GAS OIL	
Production	31,122,000
Shipments	33,070,000
Net change in stocks	—1,948,000
Ratio sales to production	106.3%
FUEL OIL	
Production	126,329,000
Shipments	145,930,000
Net change in stocks	—19,601,000
Ratio sales to production	115.5%

Every group in the field reported smaller crude runs. Kansas refiners reduced their crude runs 3,900 barrels daily average or 6.2 per cent to 59,054 barrels a day. Oklahoma refiners cut their runs 8,200 barrels daily average or 8.1 per cent to 93,716 barrels per day. The Texas group reduced runs of 5,000 barrels daily average or 5.7 per cent to 83,275 barrels a day. In north Louisiana and Arkansas the cut in crude runs was 5,800 barrels daily average or 9.7 per cent to 54,420 barrels a day.

Production of gasoline totaled 39,819,000 gallons as compared with 43,163,000 gallons the week ended Nov. 30, a reduction of 7.7 per cent. Shipments of gasoline fell only 1.7 per cent to 38,199,000 gallons. Stocks were increased only 1,620,000 gallons to 79,168,000 gallons Dec. 7. This was about two weeks' supply at the current rate of shipments. A year ago stocks of gasoline totaled 68,271,000 gallons also about 14 days' supply at the lower rate of shipments being made then.

The increase in gasoline stocks was confined mainly to the Kansas group where there was an addition to reserves of 1,200,000 gallons. Oklahoma plants added only 117,000 gallons to stocks, Texas plants only 208,000 gallons and Louisiana and Arkansas plants 97,000 gallons.

Shipments of kerosene fell 10 per cent to 6,112,000 gallons but production was cut 7 per cent to 5,899,000 gallons permitted refiners to reduce their stocks 213,000 gallons. All groups reduced stocks except Texas.

Shipments of stove distillate rose 24.2 per cent to 1,597,000 gallons while production was being cut 11.7 per cent to 1,101,000 gallons. Stocks were cut 496,000 gallons to 5,765,000 gallons. A year ago stocks of stove distillate stood at 11,728,000 gallons, approximately twice their present level.

Gas oil shipments totaled 8,299,000 gallons, while production was cut to 7,608,000 gallons, causing a cut in stocks of 691,000 gallons to 54,340,000 gallons. Stocks a year ago were 72,905,000 gallons.

Fuel oil shipments rose 3.4 per cent or 1,200,000 gallons to 36,951,000 gallons, the highest level reached for many weeks. Fuel oil production fell 8.7 per cent or 3,000,000 gallons to 30,611,000 gallons. Stocks were cut 6,340,000 gallons to 169,572,000 gallons. In the last four weeks, fuel oil stocks have been reduced 19,601,000 gallons.

TULSA, Dec. 8.—C. D. Luddington has been made traffic manager of the Marland Refining Co. He has been connected with the traffic department of the company since 1919 as an assistant to H. C. Mulroy who recently resigned.

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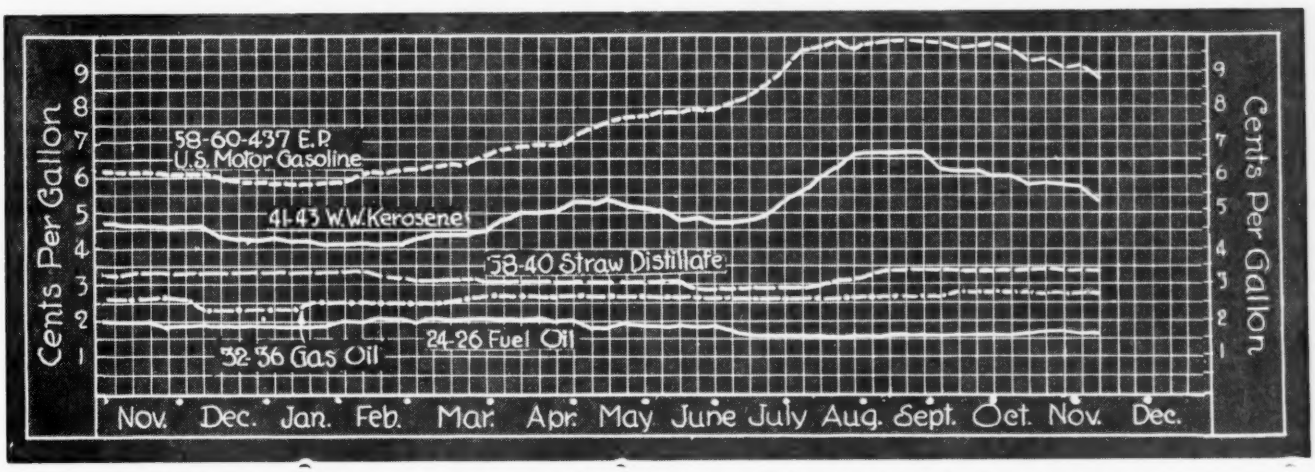
Refinery - Tank Wagon Markets

National Petroleum News

Current Prices of Principal Mid-Continent Refined Products



Prices shown are on Group 3 basis and extended to date shown in Refinery Market Tables Section of this Issue

Prices Recede On Oklahoma Gasoline; Some Refiners Storing for Spring

Staff Special

TULSA, Dec. 8

THE Mid-Continent refinery market was quiet and featureless throughout the first week of December. Exporters displayed no interest in the market, and domestic buying was comparatively light.

Price ranges for gasoline were narrowed somewhat late in the week when several refiners reduced their quotations. The weighted average price for 58-60 U. S. Motor in Oklahoma on Dec. 7 was below 9 cents for the first time in several months.

Higher gravity gasolines were in better demand due, to cold weather.

Natural gasoline prices moved lower, losses ranging from 0.50 to 1 cent according to the grade. Demand was extremely light.

Kerosenes also lost some ground with demand light from the domestic trade and no export inquiries in the field. Distillates and gas oil continued to be in active demand, although prices were generally unchanged. Fuel oils were generally steady.

Gasolines

Several Oklahoma refiners who had been quoting 9 cents and above for 58-60 U. S. Motor reduced their prices later in the week to 8.75 to 9 cents. A few continued to quote 9 cents while one refiner continued to ask 9.375 cents for his gasoline.

Sales at these new price levels, coupled with sales by three or four other reporting refiners who have been moving some of their U. S. Motor at prices ranging from 8.25 cents up, brought the weighted average price for 58-60 U. S. Motor to 8.9761 cents on Dec. 7. This is the first time the weighted average has been below 9 cents for several months.

Several Oklahoma refiners continued to pass up business rather than compete with other territories at prices which would give a netback considerably under what the Oklahoma refiners generally have been obtaining for their goods.

A few of the larger refiners in Oklahoma have started their winter storage program in preparation for the peak demand next spring. It will be recalled that gasoline stocks in the Mid-Continent were extremely low for a period this last spring and summer and a few refiners who had jammed their storage tanks to capacity enjoyed such a good volume of business that they all but drained the tanks during the summer. The refiners who have started storing gasoline will have a comparatively small volume to sell on the spot market this winter, their contracts and the storage plan taking care of the bulk of their production.

Higher gravity gasolines were in better demand in most quarters, due to the colder weather in much of the Mid-Continent marketing territory. Prices for the higher gravities, however, moved downward in sympathy with the U. S. Motor grades.

Natural Gasolines

Manufacturers reported business was extremely quiet throughout the week. Little over-the-month buying was done prior to the first of the month and now spot business has not been as good as several had anticipated. Virtually all the natural gasolines are moving north and east for domestic consumption. No large orders for movement to Gulf terminals have been reported in the field so far this month.

Price of grade C lost the most ground this week. A week ago the price was 8.50 cents a gallon as compared with 7.25 to 7.50 cents Dec. 8.

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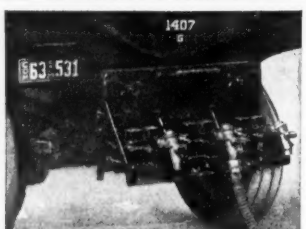

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Grades B and BB on Dec. 8 were 7.50 to 7.75 cents a gallon as compared with 8.50 cents on Dec. 3.

Demand for grade A from one source has caused the price of that commodity to move away from the price for grade AA. The former grade was bringing 9 cents a gallon as compared with 8.50 to 8.75 cents for grade AA.

Kerosenes

Oklahoma and Kansas refiners apparently were the only ones in the Mid-Continent who were finding kerosene business slow. Prices in those two areas were reduced slightly during the week and almost without exception refiners reported their orders were not keeping pace with production.

Texas refiners have been enjoying a good business from the domestic trade, primarily from two or three large companies in that territory and they accordingly have been moving their production and their prices have remained steady throughout the week. There is comparatively little kerosene made in Arkansas and Louisiana and the demand easily takes care of that production most of the time.

Distillates and Gas Oil

Demand for distillates continued to be good both for spot shipment and on contracts. Prices have not changed but several buyers report more difficulty in obtaining the better grades of distillates for spot shipment.

At the end of November, 1927, Mid-Continent refiners reporting weekly operations to NATIONAL PETROLEUM NEWS had approximately 13,200,000 gallons of distillates in storage. Stocks had been slowly reduced from around 14,500,000 gallons. By the first of March, 1928 stocks had been reduced over 8,000,000 gallons to 4,500,000 gallons.

The same group of refiners at the end of November this year had only 6,200,000 gallons of distillates in storage. If the draft on stocks this year is as heavy as it was last year refiners will have to boost distillate production considerably or the trade may experience an acute shortage of that product.

Gas oil stocks also are considerably below the levels of a year ago, and buyers reported a better demand for gas oils for burner purposes. Cracking operations also have drawn on gas oil stocks to a certain extent. Zero cold test goods have been in good demand at generally unchanged prices.

Fuel Oils

The fuel oils have been virtually unchanged both in price and demand for the past several days. Considerable over-the-month buying has been reported at prices in line with

the spot market. Low cold test fuels have been especially active.

The demand for fuels has been sufficient in all areas the past two or three weeks to cause drafts on stocks in all areas. Stocks are still at such a high level, however, that it is unlikely any upturn in prices will come in the immediate future.

Neutral Oils, Cylinder Stocks, Wax

No changes were noted this week in prices or demand for neutral oils, cylinder stocks or wax.

Court Rules Against Cities Taxing Oil Jobbers

CHICAGO, Dec. 7.—Regulatory measures by cities and towns in Illinois, imposing rules, special taxes, license fees and the like upon oil stations can no longer be enacted. The supreme court of the state has declared that authority to legislate about the petroleum industry lies in the state and nowhere else.

Moreover, the supreme court ruled at the same time, that city ordinances regulating and assessing fees from service stations are all invalid if they were passed since July 1, 1919. That takes in most of such ordinances but unfortunately does not endanger the security of the Chicago license fee.

The decision developed in the case of John Kizer, an oil man in Mattoon, Ill., who went into the Circuit Court of Coles county, Ill., about a year ago seeking relief from what he considered an excessive filling station license fee. Mr. Kizer does business as the Kizer Oil Co., of Mattoon.

The Illinois Petroleum Marketers association was interested in the litigation and gave all the help that its officials could muster from their collective experience and their combined legal staffs. There were several plaintiffs. Besides the Kizer Oil Co., were the Mattoon Oil & Gas Co., operated by Henry W. Barger and H. B. O'Hair; Ozee & Hayes, headed by C. H. Ozee; and John T. Hackley.

The law purported to regulate about every thing an oil man might try to do in carrying on his business from the time he started to build his plant until he ceased to operate, including making repairs, building additions, and selling goods. It empowered the city fire chief to make laws against the business at his discretion and, most important of all, it collected revenue.

The city won its case in the lower court, but it was appealed.

Justice Oscar E. Heard, in delivering the court's opinion wrote somewhat at length, but the gist of it was that Mattoon waited too late to pass its ordinances regulating and exacting fees from the oil operators.

Chicago Resale Market

Gasoline Lower; Distillate Active

Staff Special

CHICAGO, Dec. 8

FURTHER reductions in spot gasoline prices and active movement of furnace oils featured the week ended Dec. 8, in the Chicago resale market. Gasoline prices were still showing downward tendencies and registered a drop of approximately .25 cent during the week.

Reports from most quarters indicate that gasoline consumption was good during the week but most of the movement to jobbers was on a contract basis, consequently the spot demand continued light.

However, some sellers, who are selling on the low range of the market, reported a fairly active demand. Orders were mostly for one and two cars, they said, indicating that jobbers were still pursuing their hand-to-mouth buying policy.

The bulk of sales of 58-60 U. S. Motor gasoline during the early days of the week were at 8.50 to 9.25 cents, although sales were reported below the low range. On Dec. 6, practically all the leading refiners, who had been quoting 9.25 cents, dropped their spot price to 9 cents, and some of them made a further reduction to 8.75 cents on Dec. 8.

The low range of the market moved down .125 cent on Dec. 6 and the price range on U. S. Motor as the week closed was 8.375 to 9 cents. Some sellers reported moving U. S. Motor at 8.25 cents but these sales were not widespread. Most marketers said their buying prices were around 8.125 cents and they were taking a .25 cent profit whenever possible.

Some Texas gasoline around 57 gravity was being offered on a basis of 8 cents Group 3. Refiners in the Louisiana-Arkansas districts, with favorable freight rates to Michigan points, were moving gasoline there at approximately .25 cent under the prevailing Group 3 market.

Opinion was divided as to the probability of further reductions in the gasoline market. Some sellers said that prices would maintain an average of around 8.50 cents for the remainder of the month, while others thought that price would be the top of the market.

Higher gravity gasolines were in better demand in some quarters, but some sellers said their movement of these grades was very light. Demand for anti-knock gasolines appeared to be holding down high test demand in some sections.

The 60-62, 437 e. p. gasoline moved mostly at 8.75 to 9.50 cents up to Dec. 6 and at 8.50 to 9.25 cents thereafter. Most sales of 60-62, 400 e. p. were at 9.25 to 9.50 cents after Dec. 6, moving at 9.50 to 9.75 cents previously. The price range on 64-66, 375 e. p. gasoline was 10 to 10.50 cents as the week opened and 10 to 10.25 cents after Dec. 6.

Demand for kerosene continued light this week, although prices were apparently pegged at the same level that has prevailed for some time. Practically all sellers were getting 5.625 to 5.75 cents for the 41-43 w. w. kerosene, with a few sales reported at 5.50 cents.

Furnace oils were enjoying a good play in the Chicago district this week. Distributors reported that the colder weather and occasional snows had brought a considerably increased demand from owners of oil burners. Refiners and marketers reported an active call from these distributors for distillate, zero gas oils, and high gravity, low cold test fuel oils suitable for burner use. One or two refiners were behind on distillate shipments.

On the other hand, heavy fuels and ordinary gas oil were quiet as industrial buying was not heavy.

Prices on distillate and zero gas oils were up fractionally during the week. Light 38-40 straw distillate moved mostly at 3.375 to 3.50 cents up to Dec. 8, when practically all sellers were getting 3.50 cents.

Some sales were reported Dec. 8 at 3.375 and 3.625 cents. Dark zero 32-36 gas oil opened Dec. 3 at 2.75 to 2.875 cents and moved up to 2.75 to 3 cents on Dec. 4. Straw zero gas oil of 32-36 gravity moved at 2.875 to 3.125 cents most of the week after opening Dec. 3 at 2.875 to 3 cents. Ordinary dark 32-36 gas oil was unchanged at 2.50 to 2.625 cents.

Prices on fuel oils showed no change over those prevailing the past two weeks.

Temperatures will be above normal first half next week in Standard of Indiana territory, becoming colder towards close. Frequent precipitation will occur throughout week in lakes region. Fair weather will prevail the first half of the week in other sections of the territory.

Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (Weighted Average Prices)

	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
58-60 U.S. Motor, 437 e.p.	8.7976	9.0680	9.1925
60-62 437 e.p. gasoline....	8.9791	9.1786	9.3750
60-62 400 e.p. gasoline....	9.2500	9.6250	9.8438
64-66 375 e.p. gasoline....	10.4167	10.7031	10.5625

In this issue, all above weighted average prices are effective on Monday on the dates shown at the top of the columns.

THE gradual lowering of prices in Oklahoma, Group 3 to levels more nearly in line with quotations to the trade from areas outside of Oklahoma, is reflected in the above weighted averages.

Several Oklahoma refiners during the past week reduced their quotations from 0.25 to 0.50 cent a gallon. A few other reporting refiners continued to sell their 58-60 U. S. Motor at prices ranging from 8.25 to 9 cents a gallon. These sales together with those at 9 cents and above have been given their proper weight in determining the above weighted average prices.

The volume of goods moved during the week from the few non-reporting refiners has been comparatively light. The sales for the most part have been in line with those reported by the reporting refiners.

(The above weighted averages are made up from confidential daily reports of all gasoline spot market sales—for shipment in 10 days—from Oklahoma refineries only and representing 85.2 per cent of the state's refining capacity. The above prices do not include prices on sales for "over the month," for contracts, or to brokers or on shipments to company owned stations. Records of the reporting refiners are checked periodically to verify the accuracy of their reports.—Editor.)

OKLAHOMA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
48-50 450 e.p. naphtha...	†8.00	†8.25 – 8.50	†8.50 – 8.75
50-52 450 e.p. naphtha...	†8.00	†8.25 – 8.50	†8.50 – 8.75
56-58 450 e.p. gasoline....	8.25 – 8.75	8.50 – 9.00	8.875– 9.125
58-60 450 e.p. gasoline....	8.50 – 8.875	8.625– 9.125	9.00 – 9.25
64-66 390 e.p. gasoline....	9.875–10.125	10.00 –10.375	10.00 –10.375
68-70 350-360 e.p. gasoline	10.50 –10.75	10.75	10.75
PENNSYLVANIA			
52-54 Naphtha.....	9.25 –10.25	9.25 –10.50	9.25 –10.50
54-56 Naphtha.....	9.25 –10.25	9.25 –10.50	9.25 –10.75
58-60 U.S. Motor 437 e.p.	10.50 –10.75	10.50 –11.00	10.50 –11.00
60-62 400-410 e.p. gasoline	11.00 –11.75	11.50 –12.00	11.00 –12.00
64-66 390 e.p. gasoline....	12.00 –12.50	12.25 –13.00	12.25 –13.00
68-70 Str-run gas. 350-360 e.p.....	12.75 –13.75	12.75 –13.50	13.25 –13.50
OHIO (Quotations of S. O. Ohio)			
58-60 U.S. Motor, delivered in Ohio, 3c tax to be added	11.75	11.75	11.75
KANSAS (F. O. B. refinery Kansas destination)			
58-60 U.S. Motor 437 e.p.	9.00	9.25 – 9.50	9.50
60-62 400 e.p. gasoline....	9.75	10.25	10.25
64-66 375 e.p. gasoline....	10.50 –10.75	10.75 –11.00	10.75 –11.00
NORTH TEXAS			
48-52 450 e.p. naphtha...	†7.75	†7.75 – 8.00	†8.50 – 8.75
56-58 450 e.p. gasoline....	†7.75	†8.00	†8.75
58-60 450 e.p. gasoline....	†7.75	†8.00	†8.75
58-60 U.S. Motor 437 e.p.	8.25 – 8.50	8.25 – 8.75	9.00
60-62 400 e.p. gasoline....	9.25	9.25 – 9.50	9.25 – 9.50
64-66 390 e.p. gasoline....	9.50	9.75	9.75
64-66 375 e.p. gasoline....	9.75	10.00	10.00
68-70 350-360 e.p. gasoline	10.00 –10.25	10.75	10.75

	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
58-60 U.S. Motor gasoline	9.00	9.00 – 9.25	9.25
ARKANSAS (Arkansas destination only)			
56-58 450 e.p. gasoline....	8.50	8.50 – 8.75	8.50 – 8.75
58-60 450 e.p. gasoline....	8.50	9.00	9.00
58-60 U.S. Motor 437 e.p.	8.75 – 9.00	9.00 – 9.25	9.25
‡CALIFORNIA			
54-58 U.S. Motor 437 e.p.	9.00 –12.50	9.00 –12.50	9.00 –12.50
58-61 U.S. Motor 437 e.p.	10.00 –13.50	10.00 –13.50	10.00 –13.50
42-45 Eng. dis. 445-480 e.p.....	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00

‡3c tax to be added to California gasoline prices if used in state.

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA			
Grade AA, 80-87.9, 90% Recovery.....	8.375– 8.50	8.875– 9.125	9.125
Grade A, 72-79.9, 90% Recovery.....	9.00	8.875– 9.125	9.125
Grade BB, 84-92, 85% Recovery.....	7.25 – 7.50	8.50	8.50 – 8.625
Grade B, 76-83.9, 85% Recovery.....	7.75 – 8.00	8.50	8.50 – 8.625
Grade C, 80-92, 78% Recovery.....	7.00 – 7.25	8.50	8.50
NORTH TEXAS (F. O. B. Breckenridge)			
Grade AA, 80-87.9, 90% Recovery.....	8.375– 8.50	8.875– 9.125	9.125– 9.25
Grade A, 72-79.9, 90% Recovery.....	9.00	8.875– 9.125	9.125– 9.25
Grade BB, 84-92, 85% Recovery.....	7.25 – 7.50	8.50	8.50 – 8.625
Grade B, 76-83.9, 85% Recovery.....	7.75 – 8.00	8.50	8.50 – 8.625
Grade C, 80-92, 78% Recovery.....	7.00 – 7.25	8.50	8.50
NORTH LOUISIANA (F. O. B. Monroe District)			
Grade AA.....	†8.75	†9.25 – 9.50	†9.50 – 9.625
Grade BB.....	†7.75 – 8.00	†9.00	†9.00 – 9.125
Grade C.....	†7.50 – 7.75	†9.00	†9.00
CALIFORNIA			
75-85, 375-390 e.p. blend	7.25 – 7.75	7.25 – 7.50	7.00 – 7.25

MOTOR FUEL BLENDS

OKLAHOMA			
64-66 Blend 437 e.p.....	8.25 – 8.50	8.75	8.75 – 9.00

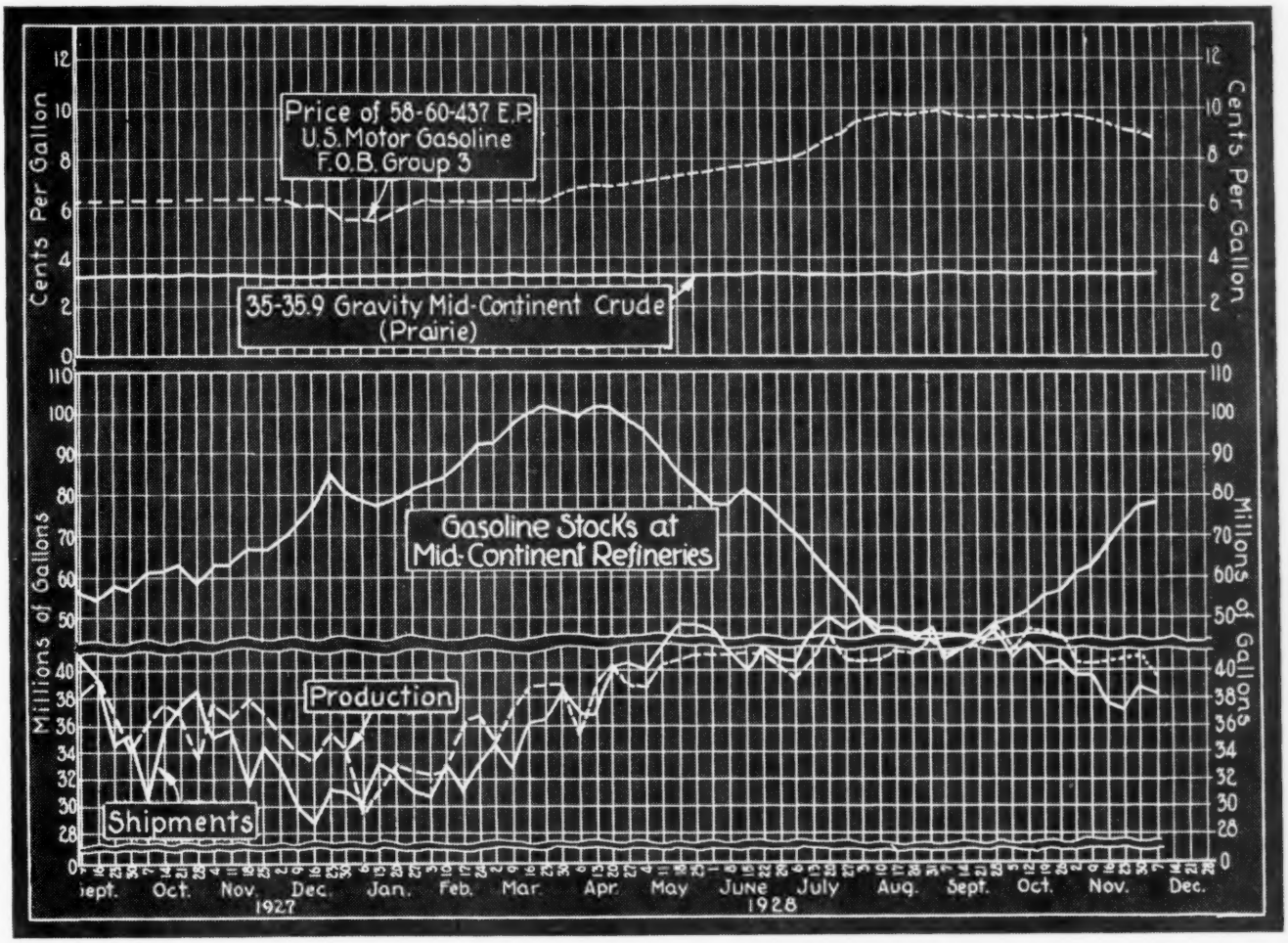
BURNING OILS

PENNSYLVANIA			
45 w.w. kerosene.....	7.25 – 7.625	7.25 – 7.625	7.25 – 7.625
46 w.w. kerosene.....	7.625– 8.00	7.625– 8.00	7.50 – 8.00
47 w.w. kerosene.....	7.75 – 8.25	8.00 – 8.25	7.875– 8.25
300 mineral seal.....	7.25 – 7.75	7.25 – 7.75	7.25 – 7.50
OKLAHOMA			
41-43 w.w. kerosene.....	5.625– 5.75	5.75	5.75 – 5.875
42-44 w.w. kerosene.....	6.25	6.25	6.25 – 6.375
KANSAS (F. O. B. refinery Kansas destination)			
41-43 w.w. kerosene.....	6.00	6.00 – 6.25	6.00 – 6.25
42-44 w.w. kerosene.....	6.25 – 6.50	6.50	6.50
NORTH TEXAS			
40-42 w.w. kerosene.....	5.50	5.50	5.50 – 5.625
41-43 w.w. kerosene.....	5.75	5.75	5.75 – 5.875
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
41-43 w.w. kerosene.....	6.75	6.75	6.75
ARKANSAS (Arkansas destination only)			
42-44 kerosene.....	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
CALIFORNIA			
38-40 w.w. kerosene.....	6.25 – 7.00	6.25 – 7.00	6.25 – 7.00

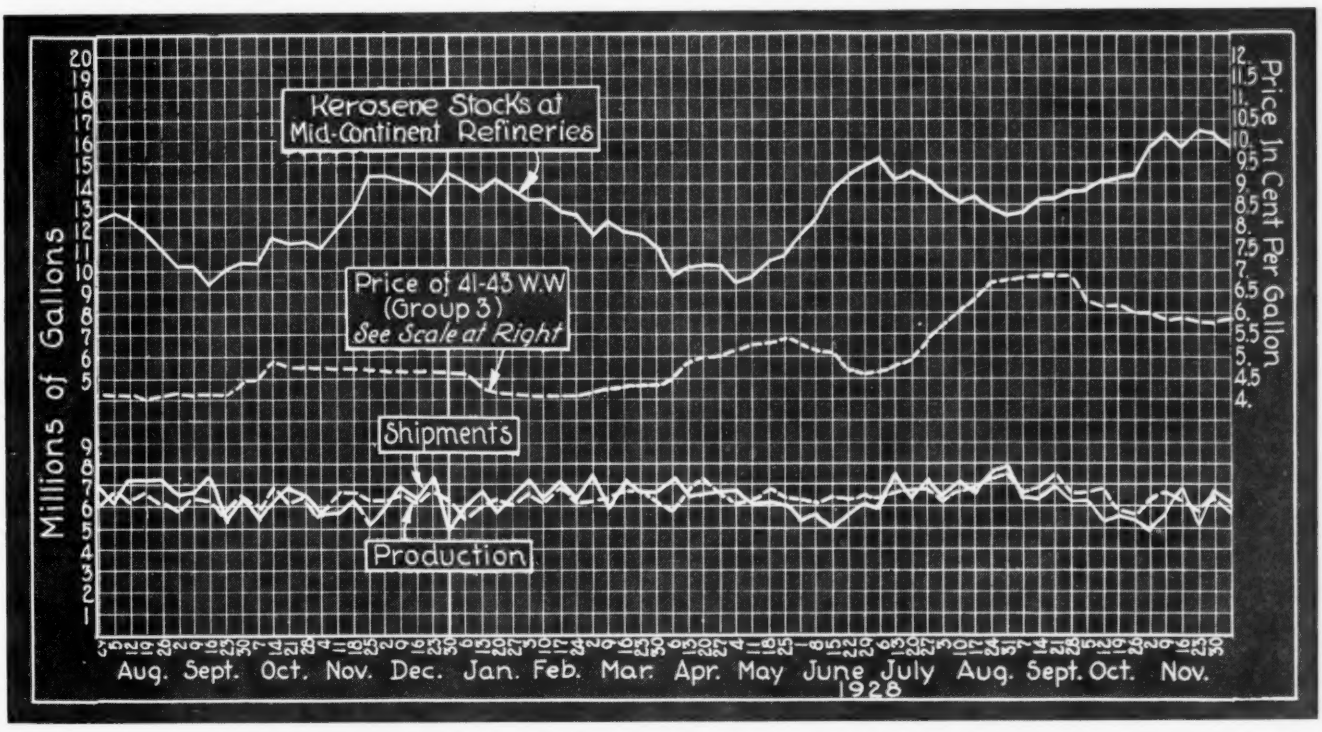
†Prices nominal ††Only one refiner quoting *Quotations only **Represents both sales and quotations

Barometer of Mid-Continent Refinery Market—Week Ending December 7

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 81 Plants to National Petroleum News


Price of 58-60-437 E.P. U.S. Motor Gasoline F.O.B. Group 3
35-35.9 Gravity Mid-Continent Crude (Prairie)
Cents Per Gallon
Gasoline Stocks at Mid-Continent Refineries
Production
Shipments
Millions of Gallons
Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on the opposite page


Kerosene Stocks at Mid-Continent Refineries
Price of 41-43 W.W (Group 3) See Scale at Right
Shipments
Production
Millions of Gallons
Price In Cent Per Gallon
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov.
1928

Refinery Markets on Wax, Lubricants and Heavy Oil Products

Prices given below are in cents per gallon, F. O. B. refinery, except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

NEUTRAL OIL

PENNSYLVANIA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
Vis.		**(Viscosity at 70°F.)**	
200 No. 3 Assoc. Filt.	28.00 –29.00	28.00 –29.00	28.00 –29.00
180 No. 3 Assoc. Filt.	25.00 –27.00	24.00 –27.00	24.50 –27.00
150 No. 3 Assoc. Filt.	21.00 –25.50	22.50 –23.00	21.00 –23.00
	(Non Viscous)		
34 Grav. 330-340 Flash	7.25 – 9.00	7.25 – 9.00	7.25 – 8.00
36 Min. Neut., 300-305 Flash	7.00 – 8.00	7.50 – 8.00	7.50 – 8.00

****OKLAHOMA**

Vis. Color			
	(Viscosity at 100°F.)		
100—No. 2	5.50 – 6.00	5.50 – 6.50	5.50 – 6.50
150—No. 3	7.50 – 8.50	7.50 – 8.50	7.50 – 8.50
150—No. 4	6.50 – 7.50	6.50 – 7.50	6.50 – 7.50
180—No. 3	8.75 – 9.50	8.50 – 9.50	8.50 – 9.50
180—No. 4	8.75 – 9.75	8.75 – 9.75	8.75 – 9.75
180—No. 5	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
200—No. 3	9.50 –10.00	9.00 –10.00	9.00 –10.00
200—No. 4	9.25 –10.00	9.25 –10.00	9.25 –10.00
200—No. 5	8.50 – 9.00	8.50 – 9.50	8.50 – 9.50
220—No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220—No. 4	12.25 –12.50	12.25 –12.50	12.25 –12.50
220—No. 5	11.50 –12.00	11.50 –12.00	11.50 –12.00
240—No. 3	13.00 –13.50	13.00 –13.50	13.00 –13.50
240—No. 4	12.00 –13.00	12.00 –13.00	12.00 –13.00
240—No. 5	11.00 –13.00	11.00 –13.00	11.00 –13.00
280—No. 3	14.00 –15.50	14.00 –15.50	14.00 –15.50
280—No. 4	13.00 –14.00	13.00 –14.50	13.00 –14.50
280—No. 5	12.00 –13.00	12.00 –14.00	12.00 –14.00
300—No. 5-6	15.00 –17.00	15.00 –17.00	15.00 –17.00

GULF COASTAL

Vis. Color			
	(Viscosity at 100°F., pour test 0)		
100—No. 2 Unfilt. Pale	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
200—No. 3 Unfilt. Pale	10.00 –10.75	10.00 –10.75	10.00 –10.75
300—No. 3 Unfilt. Pale	11.00 –11.75	11.00 –11.75	11.00 –11.75
500—No. 3½ Unfilt. Pale	12.50 –13.50	12.50 –13.50	12.50 –13.50
750—No. 4 Unfilt. Pale	15.50 –16.00	15.50 –16.00	15.50 –16.00
200—No. 5½ Red Oil	8.50 – 9.00	8.50 – 9.00	8.50 – 9.00
300—No. 5½ Red Oil	9.25 – 9.75	9.25 – 9.75	9.25 – 9.75
500—No. 6 Red Oil	10.50 –11.25	10.50 –11.25	10.50 –11.25
750—No. 6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00

CALIFORNIA

Vis. Color			
	(Viscosity at 100°F.)		
100—No. 3	9.50 –10.00	9.50 –10.00	9.75 –10.00
200—No. 3	11.50	11.50	11.50 –12.00
300—No. 3	13.00	13.00	13.00 –13.50
450—No. 3	15.50	15.50	15.50 –16.00
550—No. 3	16.50	16.50	16.50 –17.00
600—No. 3	17.00	17.00	17.00 –17.50
200—No. 5	11.00	11.00	11.00 –11.50
300—No. 5	12.00	12.00	12.00 –12.50
400—No. 5	14.00	14.00	14.00 –14.50
500—No. 5	15.00	15.00	15.00 –15.50
600—No. 5	16.00	16.00	16.00 –16.50
700—No. 7	18.00	18.00	18.00 –18.50

CYLINDER STOCKS

****OKLAHOMA**

190-200 Vis. at 210° Brt. St.	31.00 –32.00	31.00 –32.00	31.00 –32.00
150-160 Vis. at 210° Brt. St.	27.00 –28.00	27.00	27.00
600 E. St. 140-150 Vis.-210°	17.50 –18.00	17.50 –18.00	17.50 –18.00
600 St. Ref. Olive Green	7.50 –10.00	7.50 –10.00	7.50 –10.00
600 St. Ref. Dark Green	6.00 – 8.00	6.00 – 8.00	6.00 – 8.00
Black Oil	5.00	5.00	5.00

PENNSYLVANIA (1-inch Immersion Test)

600 Steam Refined	20.00 –21.00	18.00 –19.00	17.00
650 Steam Refined	24.00 –25.00	22.00 –23.00	20.00
600 Flash	27.00 –27.50	25.00	22.50 –24.00
625 Flash	34.00 –39.00	32.00 –39.00	33.00 –35.00
600 Warren E.	21.50 –24.00	20.00 –21.50	19.50 –21.00
600 Oil City E.	19.00 –23.00	19.00 –20.50	18.00 –19.00
600 D Filtered	25.50 –28.00	25.50 –26.00	25.00
Cold Test Stock, 40-50p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	36.00 –37.00	35.50 –37.00	34.00 –35.50
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	34.00 –35.00	33.50 –35.00	33.50

†Prices Nominal ††Only One Refiner Quoting *Quotations only **Represents Both Sales and Quotations

WAX

PENNSYLVANIA Per pound, New York	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
122-124 white crude scale	5.125– 5.25	5.125– 5.25	5.00 – 5.25
124-126 white crude scale	5.25 – 5.375	5.25 – 5.375	5.125– 5.25
OKLAHOMA			
**124-126 White Crude Scale	4.75 – 4.875	4.75 – 4.875	5.00 – 5.125
CALIFORNIA			
White crude scale, per pound, ton lots	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50

FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)			
36-40 fuel oil	4.75 – 5.00	4.75 – 5.00	4.625– 5.00
30-34 fuel oil	4.50 – 4.75	4.50 – 4.75	4.375– 4.50
28-32 fuel oil	4.50 – 4.75	4.50 – 4.75	4.375– 4.50
OKLAHOMA			
38-40 straw distillate	3.375– 3.50	3.375– 3.50	3.375– 3.50
36-38 straw distillate	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
32-36 gas oil, straw	†2.625– 2.875	†2.625– 2.875	†2.625– 2.875
32-36 dark gas oil	‡2.50 – 2.75	‡2.50 – 2.75	‡2.50 – 2.75
28-30 fuel oil (in bbls.)	$0.85 –$0.90	$0.85 – 0.90	$0.85 – 0.90
26-28 fuel oil (in bbls.)	$0.675– 0.725	$0.675– 0.725	$0.675– 0.725
24-26 fuel oil (in bbls.)	$0.625– 0.675	$0.625– 0.675	$0.65 – 0.675
22-26 fuel oil (in bbls.)	$0.55 – 0.625	$0.55 – 0.625	$0.55 – 0.625
18-22 fuel oil (in bbls.)	$0.55 – 0.60	$0.55 – 0.60	$0.55 – 0.60
16-18 fuel oil (in bbls.)	$0.55	$0.55	$0.55
14-16 fuel oil (in bbls.)	$0.525– 0.55	$0.525– 0.55	$0.525– 0.55

‡Zero cold test gas oil sells for 0.125 to 0.25 cent higher.

KANSAS (F. O. B. refinery Kansas destination)			
38-40 straw distillate	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
36-38 straw distillate	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
32-36 gas oil	2.75 – 2.875	2.75 – 2.875	2.75 – 2.875
24-26 fuel oil	*$0.75 – 0.80	*$0.75 – 0.80	*$0.75– 0.80
18-22 fuel oil	*$0.70	*$0.70	*$0.70
NORTH TEXAS			
38-40 straw distillate	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
32-36 gas oil, cracked	2.375– 2.50	2.375– 2.50	2.375– 2.50
32-36 St. reduced gas oil	2.375– 2.50	2.375– 2.50	2.375– 2.50
24-26 fuel oil (in bbls.)	$0.525– 0.55	$0.525– 0.55	$0.525– 0.55
GULF COASTAL			
Fuel (in bbls.)	$1.20 –$1.25	$1.20 –$1.25	$1.20 –$1.25
Gas oil	4.375– 4.50	4.375– 4.50	4.375– 4.50
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
32-36 gas oil, dark	3.00	3.00	3.00
32-36 gas oil, straw	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
16-20 fuel oil (in bbls.)	$0.70	$0.70	$0.70
ARKANSAS (Arkansas destination only)			
32-36 gas oil, straw	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
32-36 gas oil	3.00	3.00	3.00
28-32 gas oil	2.75	2.75	2.75

CALIFORNIA (F. O. B. San Joaquin Valley. At San Francisco, 4c per bbl. more)

14-18 fuel oil (per bbl.)	$0.60 –$0.70	$0.60 –$0.70	$0.60 –$1.00
14-18 Bunker oil (per bbl.)	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
30-34 gas oil (per bbl.)	$1.00 –$1.15	$1.00 –$1.15	$1.00 –$1.20
27 Plus Diesel oil (per bbl.)	$0.90 –$1.00	$0.90 –$1.00	$0.90 –$1.00

PETROLATUMS

PENNSYLVANIA (In barrels, carload lots, f. o. b. refinery. In tank cars ⅝c to ¾c per pound less.) Two refiners quoting.

Snow White	8.50 – 8.625	8.50 – 8.625	8.50 – 8.625
Lily White	7.625	7.625	7.625
Cream White	6.625	6.625	6.625
Light Amber	3.625– 3.875	3.625– 3.875	3.625– 3.875
Amber	3.375– 3.50	3.375– 3.50	3.375– 3.50
Red	3.125– 3.25	3.125– 3.25	3.125– 3.25

PETROLEUM COKE

****OKLAHOMA**

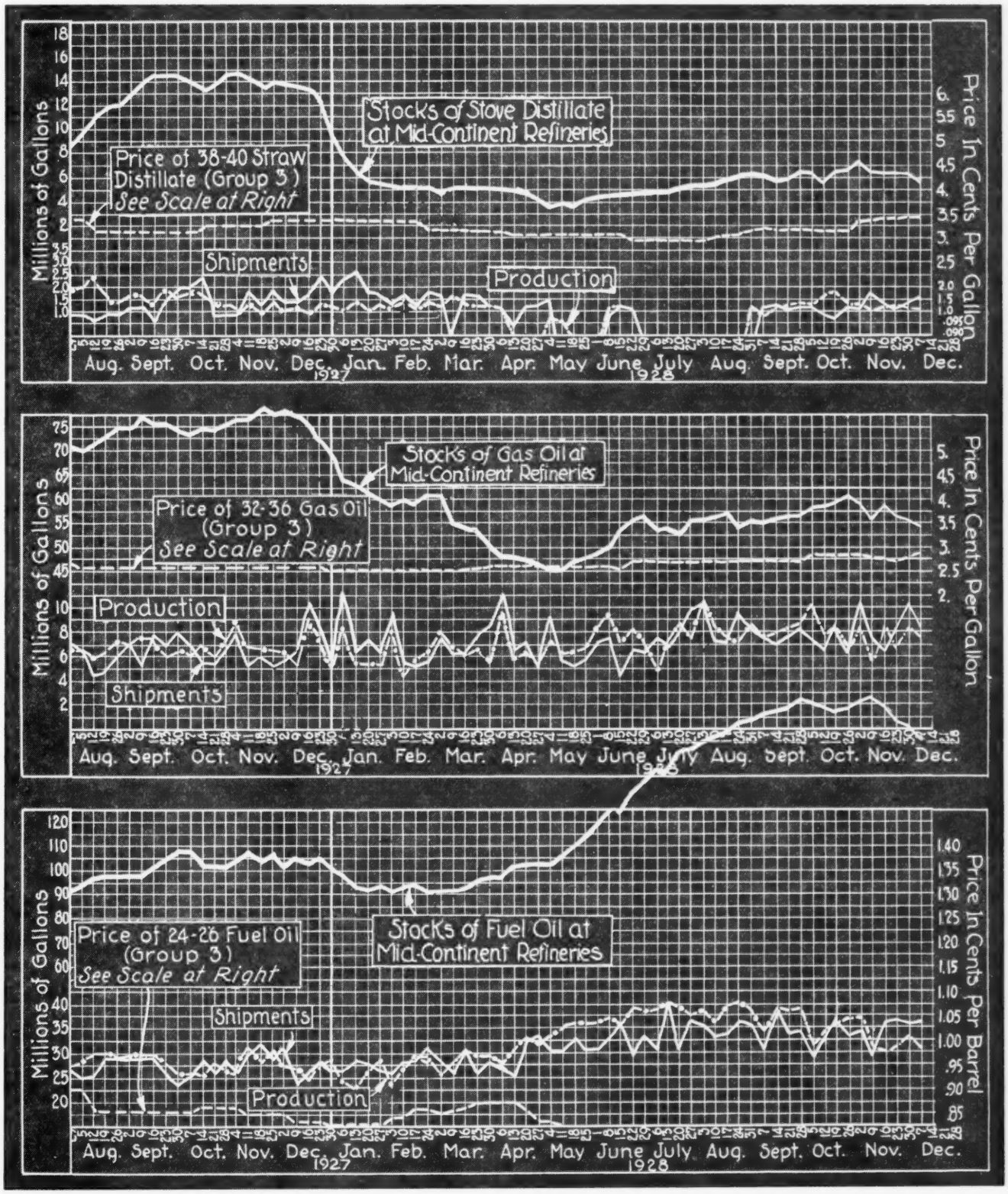
(Per ton in car lots)

Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

Barometer of Mid-Continent Refinery Market

Week Ending December 7

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 81 Plants to National Petroleum News


Millions of Gallons
Price In Cents Per Gallon
Stocks of Stove Distillate at Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) See Scale at Right
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928
Millions of Gallons
Price In Cents Per Gallon
Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) See Scale at Right
Production
Shipments
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928
Millions of Gallons
Price In Cents Per Barrel
Price of 24-26 Fuel Oil (Group 3) See Scale at Right
Stocks of Fuel Oil at Mid-Continent Refineries
Shipments
Production
Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1927
1928

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A High Compression gasoline of full premium value.

100% Hydrocarbon
100% Performance

This motor fuel has an anti-knock value by Motor Test better than that of a full premium product.

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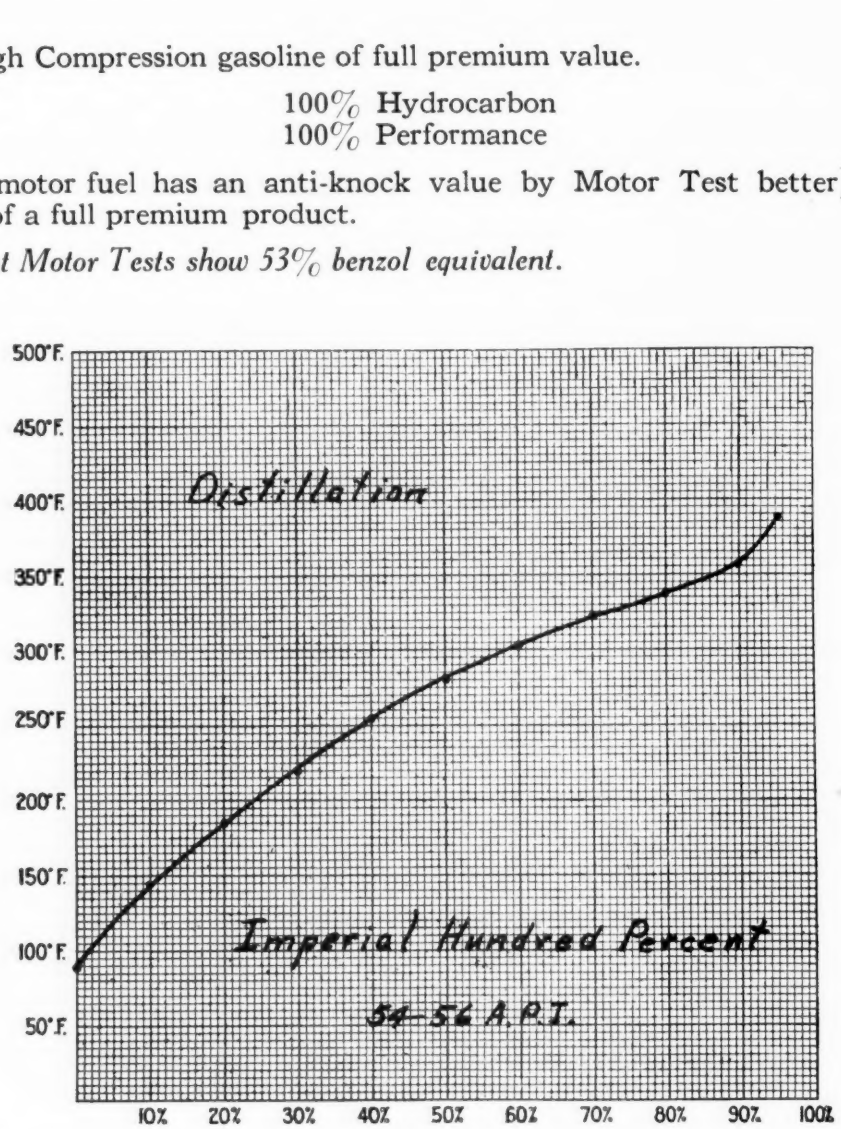


An independent premium product for independent jobbers.

"We Meet Equivalent Competition"

IMPERIAL REFINING COMPANY

General Offices

TULSA, OKLAHOMA

Pennsylvania Market

Cylinder Stocks Up

CLEVELAND, Dec. 10.—Cylinder stocks continued to advance last week in the western Pennsylvania refinery market. Quotations on the 600 steam refined now are 20 to 21 cents and on 650 steam refined 24 to 25 cents.

Most refiners are sold up on steam refined stocks until the first of the year, with sufficient production held back for regular customers. Much shopping is necessary to obtain stocks on the open market.

Bright stocks have advanced 0.50 cent in the last week. Light bright stock is 36 to 37 cents now and dark bright 34 to 35 cents. Some refiners are sold up and one refiner is quoting the top prices above for delivery five weeks hence.

Neutrals have been in brisk demand. Quotations have not reacted materially on the 180 and 200 grades. The 150 neutral is quoted at a range of 21 to 25.50 cents, with most refiners asking 22 to 23 cents.

Refiners give mixed reports on the activity of gasoline and kerosene. Some refiners report demand is fair for gasoline and good for kerosene, while others report demand is not brisk. Higher gravity gasolines are in better demand than U. S. Motor with some refiners.

Gasoline quotations have been unchanged, except for narrowing of price ranges. U. S. Motor gasoline today was quoted at 10.50 to 10.75 cents. Kerosene price ranges were unchanged although many refiners have advanced their prices .25 to .375 cent on the 45 w.w. grade.

Fuel oil is in good demand. Quotations were unchanged.

Wax Market

Foreigners Buying

NEW YORK, Dec. 8.—Foreign wax buying assumed somewhat larger proportions this week. Sales of several sizable quantities were reported, some of them actual and some of them speculative, with the result that more tonnage was booked this week than in any one week since the latter part of August. Prices firmed up considerably in response to the better demand, but failed to show any change over those quoted last week.

In addition to several 50 and 100-ton sales of white crude scale reported by various companies at 5 to 5.125 cents, one large refiner Friday made known a sale involving over 500 tons for prompt shipment at 5.125 cents a pound. It was doubtful if this price could be bettered Saturday, as was the case during the early days of the week. Several companies were holding their quotations at 5.25 cents.

The sale of 150 tons of white crude scale at 5.25 cents for shipment over the first few months of 1929 also was made known Friday but well informed market observers were inclined to class the deal as speculative. A thorough check of refiners, they said, disclosed none that was willing to quote 5.25 cents for shipment further ahead than the end of December, and the volume of goods in the hands of resale agents at the present time is negligible.

Although the trade is not looking for a repetition of last summer's runaway market, it is generally felt buying from now on will not be as spasmodic as it has been the past two months.

The demand for fully refined waxes at New York was comparatively quiet. Prices were steady with 5.75 cents the minimum quoted for 125-125 A. m. p.

The demand from South America also was a shade more active. Prices at New Orleans held at about the usual 0.125-cent under New York although it was reported by some sellers that white crude scale, and also semi-refined wax, was quite freely offered at 5 cents a pound.

California Market

Gasoline Quotations Tighter

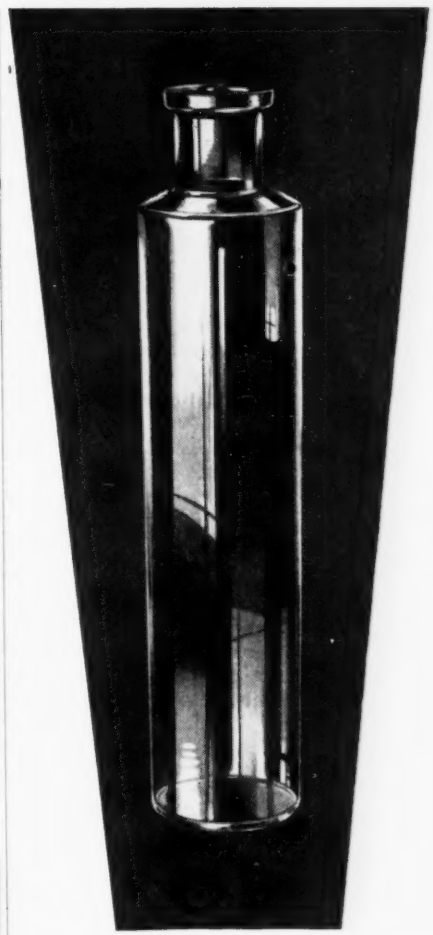
LOS ANGELES, Dec. 8.—There is a gradual tightening up in quotations on gasoline moving in tank cars and natural gasoline, although there is no actual change in prices. Motor fuel for movement to points without the state continues to hold to the former spread of 8 to 8.50 cents, although there is very little gasoline obtainable at the low price. Most of the refiners are asking and getting 8.50 cents.

Gasoline shipped in tank cars to points within California still moves at 10.50 to 12.50 cents without tax, but there is very little available at less than 12.50 cents. Only two or three small refiners will sell at 10.50 cents.

Due to scarcity of natural gasoline, the price for spot sales continues to strengthen and one marketer this week ventured the prediction that this product would be selling at around 9 cents within a month. A very large percentage of the production of natural gasoline in the state is moving to buyers under long time contracts, at around 7 to 7.50 cents. New natural gasoline plants are being erected at Kettleman Hills, Santa Fe Springs and at Elwood in Santa Barbara county, but the production from these plants will not be thrown upon the spot market.

The movement of natural gasoline

(*Continued on Page* 141)



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Illinois Glass Co.
Alton Ill.
ESTABLISHED 1873

New York Domestic Market

Spot Gasoline Demand Reduced

Staff Special
NEW YORK, Dec. 8

SPOT gasoline demand continued at low ebb in eastern tank car markets the past week. There was a steady call for contract goods. In fact, by far the bulk of shipments to points outside of New York state came under this classification.

Competition from outside areas, which continued to increase the past week, failed to shake the larger refiners at all points along the Atlantic seaboard from the firm stand they have taken. True, their outlet for spot goods has been narrowed down considerably, but there hasn't seemed to be much concern about this condition. U. S. Motor gasoline at New York harbor continued to hold at 11 cents.

Eastern jobbers outside of New York state who have marginal contracts consider themselves rather fortunate at the present time. And there are few jobbers who don't hold marginal contracts. In eastern Pennsylvania, for instance, where a posted tank wagon price of 16 cents prevails, most contracts with New York harbor companies guarantee 4.5 cents under tank wagon, which gives the jobber a delivered price of 11.50 cents at the present time. Buying in the spot market, gasoline would cost him 12.50 cents, delivered.

A similar condition prevails in the New England states where posted tank wagon is 17 cents. Most contracts there guarantee jobbers 4 cents under tank wagon, and 1-cent more "verbal"—the "verbal" meaning that if the seller feels margin in addition to 4 cents is warranted, he will be willing to give as much as 1 cent extra. With tank wagon sales being freely made at 14 cents, and occasionally at 13 cents, sellers feel there is no doubt about the extra 1 cent being warranted at this time.

Five cents under the posted 17-cent tank wagon gives the jobber a delivered price of 12 cents, against a minimum of 12.75 cents, delivered, which all New England sellers report they are quoting for spot shipment in the open market.

In direct contrast to the foregoing, the spot market still is better for New York state jobbers in view of the fact that the posted tank wagon price of the Standard Oil Co. of New York remains unchanged at 18 cents. The maximum guarantee in contracts to New York state jobbers is said to be 5 cents under posted tank wagon. Few jobbers have more than a 1.50-cent freight rate, and so buying in the spot market they have a delivered cost of not more than 12.50 cents delivered.

Shading of spot market prices in all districts continued to be reported this week. A few small purchases at 10.75 cents, f.o.b. New York harbor, for city delivery were disclosed but the total volume of goods involved was relatively small. At least three of the smaller sellers in New York harbor admitted they were taking some business at 10.75 cents but none of the larger companies reported it was meeting this competition up to the close of business Saturday.

Reports of substantial shading of open market prices in New England districts were found to be false. Several purchases reported as having been made in the open market in reality consisted of goods shipped on contracts.

A large jobber in the Boston district, however, who takes barge deliveries, reported having paid 11 cents, delivered, for the last lot he purchased some two weeks ago. He doubted, however, if he could better this price now, even with the lower posted tank wagon market.

The demand for burning oils was fairly steady. Kerosene enjoyed good movement at 9 cents for water white. Prime white was available at 8.75 cents a gallon in New York harbor. Only one refiner was offering the latter grade, however.

There was some shading of furnace oil and gas oil prices in the Boston district. One refiner reported quoting 4.50 cents for 28-32 gravity gas oil and also stated he was running into 4.25-cent competition. A large buyer in the Boston district reported paying 6 cents a gallon, f.o.b. shipping point, for a large quantity of 36-40 furnace oil. Most companies were asking a minimum of 6.25 cents.

The posted price of bunker oil at New York harbor was unchanged at $1.05 a barrel, f.o.b. terminals, but shading of this price as much as 15 cents a barrel was reported.

Gulf Export Market

Week Dull in Export Market

Staff Special
NEW YORK, Dec. 8

GULF export markets spent an unusually dull week. Foreign buyers displayed very little interest. The trade was without a single open market transaction to serve as a guide to gasoline prices. In fact, the market was minus so much as one inquiry which might have developed any foreign business.

With definitely lower gasoline prices prevailing at the Gulf, domestic buyers showed some interest in the market but their inquiries also failed to develop into sales.

The trade in New York was greatly concerned over the probability of gasoline price showing further recessions in the near future, a fact which several suppliers believe inevitable in view of the circumstances surrounding recent sales.

A week ago today, Saturday, a large French buyer purchased U. S. Motor gasoline at 9.125 cents, 60-62, 390 end point at 10.75 cents and 64-66, 375 end point at 11 cents. According to information brought to light this week, there were six suppliers who quoted for the business. Up until that time, competition in the open market had been confined pretty much to two and three suppliers. The seller was the only one known to have quoted prices as low as those in the aforementioned transaction, but the fact that the number of suppliers desirous of getting business was on the increase didn't look very encouraging to the trade.

The current quotations of the majority of suppliers were pretty much the same, with several indicating they would not hesitate to duplicate the 11-cent price paid for 64-66, 375 end point gasoline last week. At least three suppliers asserted they might shade this to 10.875 cents if confronted with a firm offer at this figure. U. S. Motor gasoline was freely quoted at 9.125 cents. One large supplier who seldom is active in the open market was offering a cargo of U. S. Motor at 9 cents, 0.125-cent under the last paid.

Water white kerosene was the strongest spot in the Gulf market. The scarcity of 44 gravity water white kerosene which has existed at the Gulf for several months continues. When used as a selling medium for gasoline, this grade can be picked up at 7.75 cents or possibly 0.0625-

cent less, but according to the ideas of most suppliers, buyers would have to pay 7.875 cents or higher for 20,000 barrels or more.

Prime white kerosene was freely offered this week at 6.75 cents. This price has been shaded 0.0625 to 0.125-cent recently on small lots in mixed cargoes, but it is doubtful if 20,000 barrels or more could be purchased under 6.75 cents. The sale to a domestic buyer of 100,000 barrels of 41-43 water white kerosene was reported early this week at 7.25 cents a gallon. There is no market in Europe for water white kerosene of less than 44 gravity.

Aside from the tentative inquiry for a cargo of gas oil received from a Scandinavian buyer, there was little activity reported in the heavy oil market at the Gulf. Gas oil prices were generally unchanged with 26-30 gravity translucent oil quoted at 3.75 to 3.875 cents and 30-32 gravity oil quoted at 3.875 cents flat.

Large domestic buyers reported they were unable to secure offers of grade C bunker oil in cargo lots at less than $0.67 a barrel this week, which represents an advance of 2 cents a barrel in suppliers' ideas of prices over the minimum quoted for some time past. Bunkering prices in the New Orleans district were advanced 10 cents a barrel to $0.95. Bunkers were available at the same price further west in the Gulf.

Correction

Prices of these waxes in the New York Export market for Dec. 3 in the Dec. 5 issue of NATIONAL PETROLEUM NEWS, page 155, were in error, and should have been: 5.125 to 5.25 cents for white crude scale wax, 122-124 and 124-126 A.m.p. grades, instead of 5.00 to 5.25 cents; and 5 cents flat for yellow crude scale, 124-126 A.m.p., instead of 4.875 to 5.00 cents. Prices are corrected in the table in this issue.

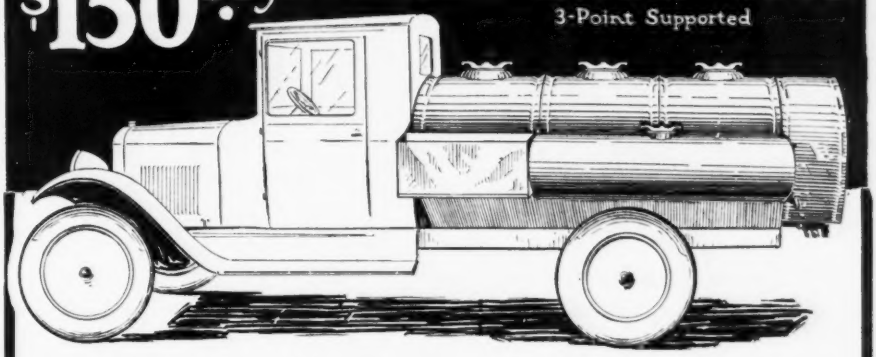
Baby's Milk Is Warmed At This Station

CLEVELAND, Dec. 8. — Heating the baby's bottle of milk is one of the services offered at the Cities Service Oil Co. gasoline station at Oberlin, O.

Tourists stopped at the station recently, inquiring if hot water was available. Mr. Hartley, the attendant, proffered the facilities of the home next door where Claude Lyman, in charge of the station, lives.

Mrs. Lyman actually performed the offices of heating the bottle. And the service was deemed highly satisfactory by the baby's mother, and the baby gurgled his delight as the tourists moved on.

$150.00 for this Convertible TRUCK TANK
3-Point Supported



60 Extra Gallons In Side Tanks

IN THE space of an hour you can switch from side racks to side tanks—a 30 or a 50 gallon tank on each side—adding 60 or a 100 gallons capacity to care for extra demand on gasoline, kerosene or lube oil. This is just one of the convertible features of the New Convertible Truck Tank. It is 3-point Supported. The tank, the mounting, the pipe lines and the bucket box are welded into an integral unit of steel. It is interchangeable on Chevrolet Trucks or the New Ford Truck and others with back of cab lengths around 80 inches. Capacity 375 gallons.

$150.00 includes side racks f. o. b. Kansas City.
Faucets, side tanks and side barrel carriers are extra.

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1507 W. 12TH ST. — KANSAS CITY, MO.

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COLUMBIAN Partition Mounted 3 Point Supported TRUCK TANK

3 point support solves torque and vibration problem.

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RED AND PALE PARAFFINE OILS

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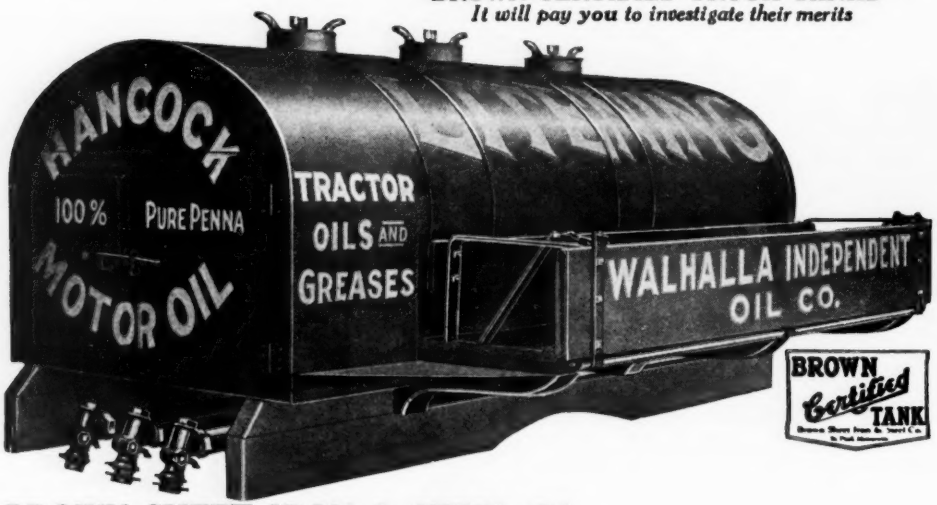

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Complete Seaboard Market

(Export markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of quotations.)

U. S. MOTOR GASOLINE	Dec. 10	Dec. 3	Nov. 26
New York harbor	11.00	11.00	11.00
Portland district	*13.25	*13.25	*13.25
Boston district	*12.75	*12.75	*12.75
Providence district	*12.75	*12.75	*12.75
Philadelphia district	11.00	11.00	11.00
Baltimore district	11.00	11.00	11.00
Norfolk district	11.00 –11.25	11.00 –11.25	11.00 –11.25
Charleston district	11.00 –11.25	11.00 –11.25	11.00 –11.25
Savannah district	11.00	11.00	11.00
Jacksonville district	11.00	11.00	11.00
CALIFORNIA U. S. MOTOR GASOLINE			
New York harbor	11.00	11.00 –11.25	11.00 –11.25
Philadelphia district	11.00	11.00	11.00
Baltimore district	11.00	11.00	11.00
WATER WHITE KEROSENE			
New York harbor	9.00	9.00	9.00
Philadelphia district	9.00	9.00	9.00
Baltimore district	9.00	9.00	9.00
GAS OIL: 28-34 Gravity			
New York harbor	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00
Boston district	4.50 – 5.00	4.50 – 5.00	4.75 – 5.00
FURNACE OIL: 36-40 Gravity			
New York harbor	6.50	6.50	6.50
Boston district	6.00 – 6.50	6.00 – 6.50	6.25 – 6.50
GRADE C BUNKER OIL			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$2.00	$2.00	$2.00
MEDICINAL OILS, RUSSIAN			
885-890 s.g., 325-330 vis.	$0.80 – 0.90	$0.80 – 0.90	$0.80 – 0.90
870-875 s.g., 150-155 vis.	$0.67 – 0.77	$0.67 – 0.77	$0.67 – 0.77
860-865 s.g., 80-85 vis.	$0.65 – 0.75	$0.65 – 0.75	$0.65 – 0.75

Note: Above gasoline prices do not include inspection tax levied in some states.
*Minimum delivered.

New York Export Market

(Gasoline and kerosene in cases in bulk. Lubricating oils are per gal. in bbls. Cylinder oils are Penna. products)

	Dec. 10	Dec. 3	Nov. 26
U. S. Motor gasoline	26.40	26.40	26.40
43-45 150 w.w. kerosene	18.90	18.90	18.90
42-44 110 s.w. kerosene	17.65	17.65	17.65
CYLINDER OILS			
Bright stock, dark	41.50 –42.50	41.00 –42.00	40.00 –41.50
600 D filtered	33.50 –35.00	33.00	32.00 –33.00
600 Warren E filtered	29.00 –31.50	27.00 –28.00	26.00 –27.50
600 s.r. unfiltered	26.50 –27.50	25.00 –26.00	22.00 –24.00
650 s.r. unfiltered	29.50 –32.00	29.00 –31.00	24.50 –27.00
600 flash, s.r.	33.00 –34.50	32.00	30.00 –31.00
630 flash, s.r.	40.00 –43.50	39.00 –43.00	36.00 –40.00
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00	19.50	19.50
250 vis. No. 6 color	19.50	18.50	18.50
200 vis. No. 6 color	18.00	18.00	18.00
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	23.50	23.50	23.50
180 vis. No. 3¼ color	19.00	19.50	19.50
100 vis. No. 2¼ color	16.00	15.50	15.50
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	33.00	34.50	34.50
500 vis. No. 6½ color	31.00	32.50	32.50
400 vis. No. 7¼ color	30.00	30.50	30.50
300 vis. No. 6 color	29.00	29.50	29.50
200 vis. No. 6 color	28.00	*20.00	*20.00

*This price is for 200 No. 3¼ color.

MEDICINAL OILS			
875-885 s.g.	$0.80	$0.80	$0.80
865-870 s.g.	$0.70	$0.70	$0.70
WAXES (In cents per pound, f.a.s. carload lots)			
WHITE CRUDE SCALE (In barrels)			
122-124 A.m.p.	5.125– 5.25	5.125– 5.25	5.00 – 5.25
124-126 A.m.p.	5.125– 5.25	5.125– 5.25	5.00 – 5.25
FULLY REFINED (In burlap bags)			
123-125 A.m.p. Phila	5.75	5.75	5.75
125-127 A.m.p.	5.75	5.75 – 5.875	5.75 – 5.875
128-130 A.m.p.	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
130-132 A.m.p.	6.50	6.50	6.50
133-135 A.m.p.	7.25	7.25	7.25
135-137 A.m.p.	7.75	7.75	7.75
YELLOW CRUDE SCALE			
24-126 A.m.p.	5.00 – 5.125	5.00	4.875– 5.00

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. and over unless otherwise noted, representing sellers' opinions, except those prices specified to the contrary)

GASOLINE	Dec. 10	Dec. 3	Nov. 26
U. S. Motor	9.00 – 9.125	9.125– 9.25	9.25 – 9.50
60-62 400 e.p.	10.50	10.50	10.50 –10.625
61-63, 390 e.p.	10.75	10.75 –11.00	11.00 –11.125
64-66, 375 e.p.	11.00	11.00 –11.25	11.25 –11.50
U. S. Motor, cases (cargoes)	$1.85	$1.85	$1.90
64-66, cases (cargoes)	$2.00	$2.00	$2.05
KEROSENE			
44 water white	7.75	7.75	7.75
41-43 prime white	6.75	6.50 – 6.75	6.625– 6.75
Water white, cases (cargoes)	$1.65	$1.65	$1.65
Prime white, cases (cargoes)	$1.55	$1.55	$1.55
DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	3.75 – 3.875	3.75 – 3.875	3.875
*30-32 translucent gas oil	3.875	3.875	3.875– 4.00
Grade C bunker oil	$0.95	$0.85 –$0.95	$0.85 –$0.95
Grade C bunker oil, cargoes	$0.67 –$0.70	$0.65 –$0.68	$0.65 –$0.68

*Less than ½ of 1% sulfur.

MEXICAN CRUDE AND BUNKER OILS (F. O. B. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.90 –$0.95	$0.90 –$0.95	$0.90 –$0.95
Grade C bunker oil, for bunkering purposes, taxes paid	$1.05	$1.05	$1.05
SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F.: cold test 0) (Tanker, f.o.b. Houston)			
100 vis. No. 2 unfiltered pale	6.25 – 6.375	6.25 – 6.375	6.25 – 6.375
200 vis. No. 3 unfiltered pale	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
300 vis. No. 3 unfiltered pale	9.25 –10.50	9.25 –10.50	9.25 –10.50
500 vis. No. 3½ unfiltered pale	10.75 –12.00	10.75 –12.00	10.75 –12.00
750 vis. No. 4 unfiltered pale	12.50 –13.00	12.50 –13.00	12.50 –13.00
1200 vis. No. 5 unfiltered pale	15.50 –17.00	15.50 –17.00	15.50 –17.00
200 vis. No. 5-6 red oil	7.00 – 8.50	7.00 – 8.50	7.00 – 8.50
300 vis. No. 5-6 red oil	8.00 – 9.25	8.00 – 9.25	8.00 – 9.25
500 vis. No. 5-6 red oil	9.75 –10.50	9.75 –10.50	9.75 –10.50
750 vis. No. 5-6 red oil	11.25 –12.00	11.25 –12.00	11.25 –12.00
1200 vis. No. 5-6 red oil	14.50 –16.50	14.50 –16.50	14.50 –16.50

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Dec. 10	Dec. 3	Nov. 26
Gasoline, U. S. Motor, 53-55 Gravity	8.00 – 8.25	8.00 – 8.25	8.00 – 8.25
Gasoline, U. S. Motor, blends and special cuts	8.50 –10.25	8.50 –10.25	8.50 –10.25
Gas Oil, 30-34, per barrel	$1.05 –$1.15	$1.05 –$1.15	$1.05 –$1.25
Diesel Oil, 27 plus, per barrel	$0.95 –$1.10	$0.95 –$1.10	$0.95 –$1.10
Bunker oil, 14-18, per barrel	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
Fuel oil, 14-18 per barrel	$0.70 –$1.00	$0.70 –$1.00	$0.70 –$1.00
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.25 – 6.00	5.25 – 6.00	5.25 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.50 –$1.60

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrels)

	Dec. 10	
	Crude &/or Fuel	Refined Oil
Calif. to U. K. or Continental ports*	25	22–23
Gulf to U. K. or Continental ports*	13	12–13
North Atlantic to U. K. or Continental ports*	11/6	11
Calif. to North Atlantic ports (not E. of N. Y.)	50-55c	65c
Gulf and North Atlantic ports (not E. of N. Y.)**	16	20–25c

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.

**For Venezuela loading 1c per bbl. additional. For Tampico loading 4c per bbl. additional.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t.w. and s.s. markets for the whole year, arranged for quick reference)

These Prices in Effect December 10, 1928, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.	T.W.
Atlantic City, N. J.	15	2	17	20	14
Newark, N. J.	15	2	17	20	14
Annapolis, Md.	15	4	19	22	14
Baltimore, Md.	15	4	19	22	12
Cumberland, Md.	15	4	19	22	14
Washington, D. C.	15	2	17	20	14
Danville, Va.	15	5	20	23	14
Norfolk, Va.	15	5	20	23	14
Richmond, Va.	15	5	20	23	14
Roanoke, Va.	15	5	20	23	14
Petersburg, Va.	15	5	20	23	14
Charleston, W. Va.	15	4	19	22	14
Keyser, W. Va.	15	4	19	22	14
Parkersburg, W. Va.	15	4	19	22	14
Wheeling, W. Va.	15	4	19	22	14
Charlotte, N. C.	15	4	19	22	14
Hickory, N. C.	15	4	19	22	14
Mt. Airy, N. C.	15	4	19	22	14
Salisbury, N. C.	15	4	19	22	14
Charleston, S. C.	15	5	20	23	14
Columbia S. C.	15	5	20	23	14

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

New York City	18	0	18	*20	15
Albany, N. Y.	18	0	18	21	15
Buffalo, N. Y.	18	0	18	20	15
Rochester, N. Y.	18	0	18	20	13
Syracuse, N. Y.	18	0	18	20	15
Boston, Mass.	17	0	17	18	15
Augusta, Me.	17	4	21	22	15
Manchester, N. H.	17	4	21	22	15
Burlington, Vt.	17	3	20	21	15

*The Standard of New York does not operate stations in New York City. This figure is the retail price of a principal station operator in New York, selling Socony gasoline.

ATLANTIC REFINING

Pittsburgh, Pa.	†16	*	†16	*20	15
Philadelphia, Pa.	†16	*	†16	*20	15
Allentown, Pa.	†16	*	†16	*20	15
Erie, Pa.	†16	*	†16	*20	15
Scranton, Pa.	†16	*	†16	*20	15
Altoona, Pa.	†16	*	†16	*20	15
Dover, Del.	†16	3	†19	20	15
Wilmington, Del.	†16	3	†19	20	15
Boston, Mass.	17	0	17	18	15
Springfield, Mass.	17	0	17	18	15
Worcester, Mass.	17	0	17	18	15
Providence, R. I.	17	2	19	20	15
Hartford, Conn.	17	2	19	20	14
New Haven, Conn.	17	2	19	20	15

*3-cent state tax is collected by retail dealer and paid by him directly to state.

†For commercial accounts under definite contract for a year's supply, the Atlantic Refg. Co. recognizes a discount of 1c below t.w. market where contract calls for between 5,000 and 10,000 gals. a year, and 2c where contract calls for deliveries above 10,000 gals., where deliveries on the account are by tank wagon.

For such commercial accounts taking deliveries from service stations, the same discounts apply but are figured from the posted service station price.

S. O. KENTUCKY

Ashland, Ky.	17	5	22	24	15.5
Catlettsburg, Ky.	17	5	22	24	15.5
Lexington, Ky.	16	5	21	22	15.5
Louisville, Ky.	16	5	21	23	15
Covington, Ky.	17	5	22	22	15.5
Clarksdale, Miss.	18	4	22	24	13
Gulfport, Miss.††	19.5	4	23.5	25.5	14
Jackson, Miss.	16	4	20	22	14.5
Natchez, Miss.	17.5	4	21.5	23.5	14
Vicksburg, Miss.	17.5	4	21.5	23.5	14
Birmingham, Ala.	18	4	22	24	16
Mobile, Ala‡	18	4	22	24	15
Montgomery, Ala.*	16	4	20	21	16.5
Atlanta, Ga.	18	4	22	24	†16.5
Augusta, Ga.	18	4	22	24	†15.5
Macon, Ga.	18	4	22	22	†16.5
Savannah, Ga.	17	4	21	23	†15.5
Jacksonville, Fla.	18	5	23	25	14.5
Miami, Fla.	19	5	24	26	15.5
Tampa, Fla.	18	5	23	25	14.5
Pensacola, Fla.**	19	5	24	26	14.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included. ‡Mobile gasoline prices include 1c city tax.

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

Latest Changes In Tank Wagon Prices

Gasoline Changes

S. O. Kentucky—T.w. and s.s. prices gasoline advanced 1c, Mississippi, covering tax increase to 5c, **Dec. 1.**

T.w. and s.s. prices cut 1c, Montgomery, to 20c and 21c respectively, **Dec. 1.**

S.s. price only advanced 2c, Savannah, to 23c, **Nov. 26.**

S.s. price only cut 2c, Macon, to 22c, **Nov. 24.**

S. O. Ohio—Through misunderstanding the tank wagon price of gasoline in S. O. Ohio territory was shown in Dec. 5 issue, page 157, as 17 cents, including 3c tax. This was in error, the company continuing to recognize 19c as its official tank wagon market, and allowing a maximum discount to dealers of 3c off the service station prices.

S. O. Indiana—S.s. price only cut 1c, Chicago and suburbs, to 16c, **Dec. 10.** T.w. unchanged at 15c.

Canada—T.w. and s.s. prices gasoline advanced 2c, New Brunswick, covering provincial tax increase to 5c, **Dec 1.**

S. O. INDIANA

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.	T.W.
Chicago, Ill.	15	0	15	16	12
Decatur, Ill.	15.2	0	15.2	15	12.1
E. St. Louis, Ill.	14.4	0	14.4	16.4	11.2
Joliet, Ill.	15.4	0	15.4	17.4	12.3
Peoria, Ill.	15.2	0	15.2	14	12.1
Quincy, Ill.	15.2	0	15.2	17.2	11.9
Indianapolis, Ind.	15.2	3	18.2	18.2	13.2
Evansville, Ind.	15	3	18	20	13
South Bend, Ind.	15.4	3	18.4	20.4	13.4
Detroit, Mich.	15.8	3	18.8	20.8	13.7
Grand Rapids, Mich.	15.7	3	18.7	20.7	13.6
Saginaw, Mich.	15.9	3	18.9	20.9	13.8
Green Bay, Wis.	15.6	2	17.6	19.6	12.4
Madison, Wis.	15.3	2	17.3	17.3	12.1
Milwaukee, Wis.	15.1	2	17.1	19.1	11.9
La Cross, Wis.	16.2	2	18.2	20.2	13
Minneapolis, Minn.	16.2	2	18.2	20.2	12.9
Duluth, Minn.	16.5	2	18.5	20.5	12.9
Mankato, Minn.	16.1	2	18.1	20.1	12.7
Des Moines, Ia.	15.5	3	18.5	18.5	12.3
Davenport, Ia.	15.5	3	18.5	20.5	12.3
Sioux City, Ia.	15.1	3	18.1	20.1	11.9
Mason City, Ia.	15.5	3	18.5	20.5	12.3
St. Louis, Mo.	*14.9	2	16.9	16.9	11.3
Kansas City, Mo.	†15.9	2	17.9	17.9	10.6
St. Joseph, Mo.	†15.5	2	17.5	17.5	11.2
Fargo, N. D.	17.9	2	19.9	21.9	14.9
Grand Forks, N. D.	18.2	2	20.2	22.2	15.2
Minot, N. D.	17.9	2	19.9	21.9	14.9
Pierre, S. D.	16	4	20	22	13.4
Huron, S. D.	16.3	4	20.3	22.3	13.7
Wichita, Kans.	13.8	2	15.8	17.8	10.8
Bartlesville, Okla.	13.5	3	16.5	18.5	10.5

S. O. Indiana's quantity contract price schedule on tank truck deliveries of gasoline, figured from the service station price, is 2c for 500 gals. or more a month; 2½c for 2000 gals. or more a month; and 3c for 6000 gals. or more a month.

*Includes city tax of ½c

†Includes city tax of 1c.

CONTINENTAL OIL

Denver, Colo.	16	3	19	22	14.5
Pueblo, Colo.	16	3	19	22	14.5
Grand Junc., Colo.	19.5	3	22.5	25.5	18
Casper, Wyo.	16	3	19	22	13
Cheyenne, Wyo.	17	3	20	23	14.5
Butte, Mont.	20.5	3	23.5	26.5	19
Helena, Mont.	20.5	3	23.5	26.5	19
Salt Lake City, Utah	18.5	3½	22	25	17
Boise, Ida.	20.5	4	24.5	27.5	19
Twin Falls, Ida.	20.5	4	24.5	27.5	19
Albuquerque, N. M.	17	5	22	25	17

S. O. CALIFORNIA

Phoenix, Ariz.	12	4	16	20	21.5
Los Angeles, Cal.	13.5	3	16.5	20.5	15.5
Fresno, Cal.	14	3	17	21	16.5
San Francisco, Cal.	14	3	17	21	15.5
Reno, Nev.	18	4	22	26	19
Portland, Ore.	14.5	3	17.5	21.5	16.5
Seattle, Wash.	14.5	2	16.5	20.5	16.5
Spokane, Wash.	18.5	2	20.5	24.5	20.5
Tacoma, Wash.	14.5	2	16.5	20.5	16.5

S. O. LOUISIANA

Little Rock, Ark.	13	5	18	22	14
Alexandria, La.	13	2	15	18	†16
Baton Rouge, La.	12	2	14	17	†14.5
Lake Charles, La.	13.5	2	15.5	18.5	†16
New Orleans, La.	*11.5	2	*13.5	*16.5	†16
Shreveport, La.	13.5	2	15.5	18.5	†15
Lafayette, La.	13	2	15	18	†15.5
Bristol, Tenn.	16	3	19	22	15
Chattanooga, Tenn.	15.5	3	18.5	21.5	16
Knoxville, Tenn.	14	3	17	20	16
Nashville, Tenn.	13	3	16	19	16
Memphis, Tenn.	14	3	17	20	15

*New Orleans gasoline prices include 1c parish tax in addition to 2c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax

S. O. OHIO

	Gasoline		Total		Oil
	T.W.	Tax	T.W.	S.S.	T.W.
All Ohio points	*16	3	*19	20	12

*S. O. Ohio recognizes a maximum discount to dealers of 3c per gal. under its service station price of gasoline.

S. O. NEBRASKA

Omaha, Neb.	15.25	2	17.25	19.25	12.25
McCook	16.75	2	18.75	20.75	13.75
Norfolk	15.75	2	17.75	19.75	12.75
North Platte	16.75	2	18.75	20.50	13.50
Scottsbluff	16.75	2	18.75	20.75	13.25

MAGNOLIA PETROLEUM

Muskogee, Okla.	15	3	18	20	12
Oklahoma City	15	3	18	20	12
Tulsa, Okla.	14	3	17	19	10
Fort Smith, Ark*	15	†3	18	20	14
Little Rock, Ark.	16	5	21	23	14
Texarkana, Ark.*	14.5	*2	16.5	20.5	13
Dallas, Tex.	14	2	16	20	12
Fort Worth, Tex.	14	2	16	19	12
Houston, Tex.	14	2	16	20	15
San Antonio, Tex.	12	2	14	17	11
El Paso, Tex.	15	2	17	20	16

*Within city of Texarkana, the state tax on gasoline is 2c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 3c applies. In this district outside of the city, the 5c Arkansas tax applies.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	14.7	16.2	18
Detroit	16.4	17.9	19.7
Kansas City	†14.9	†16.4	†18.2
Milwaukee	15.4	*18.9	*20.7
Minneapolis	*18.7	*20.2	*22
St. Louis	14.6	16.1	17.9
New York		20	....

*Includes 2c state tax. †Includes 1c city tax.

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both; Colorado, 1/10c on both; Florida, 1/8c on both; Indiana, 2/25c on both; Kansas, 1/50c on both; Louisiana, 1/32c on gasoline, 1c on kerosene; Minnesota, 3/50c on both; Missouri, 1/50c on both; Nebraska, 3/50 to 1/2c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c on kerosene; Wisconsin, 3/50c on both.

Kerosene inspection fees only: Iowa, 13/100c; Michigan, 1/5 to 4/5c per gal.

In Illinois, cities and villages have the power to appoint oil inspectors and fix inspection fees which is done in some instances. In some cases in the above states or other states there are local inspection fees.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

CANADA

Prices in Effect December 10, 1928

(Per Imperial Gallon, which is 1.2 American Gallons)

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W
ONTARIO					
Toronto	20.5	3	23.5	27	22
Ottawa	20.5	3	23.5	27	22
Cochrane	25.5	3	28.5	..	27
Ft. William	23.5	3	26.5	30	23.5
MANITOBA					
Winnipeg	22.5	3	25.5	29	22.5
SASKATCHEWAN					
Regina	27	3	30	34	27
ALBERTA					
Edmonton	27.5	3	30.5	34	27.5
Calgary	23.5	3	26.5	30	23.5
BRITISH COLUMBIA					
Vancouver	22	3	25	29	23
QUEBEC					
Montreal	21.5	5	26.5	30	22
Quebec City	22.5	5	27.5	31	23
Three Rivers	22.5	5	27.5	31	23
NEW BRUNSWICK					
St. John	25	5	30	33.5	25
Moncton	25	5	30	33.5	25
NOVA SCOTIA					
Halifax	25	5	30	33.5	25
Sydney	25	5	30	33.5	25
PRINCE EDWARD ISLAND					
Charlottetown	25	5	30	33.5	25

Note: In districts surrounding these points 1c additional is added to city price.

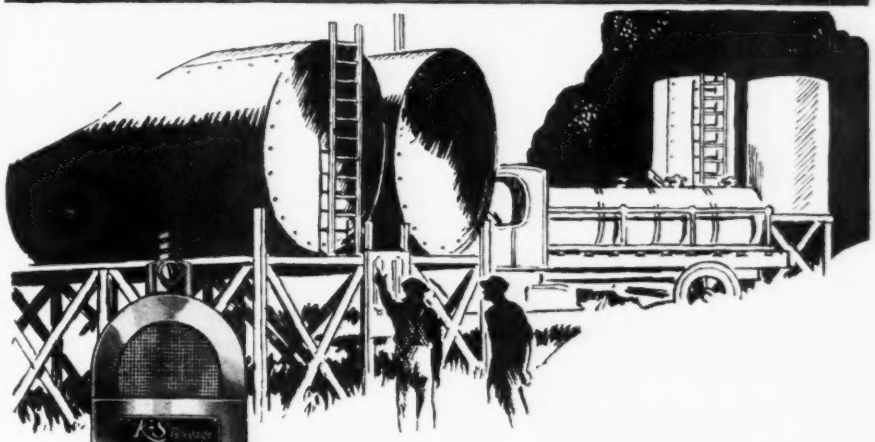
Curb Pumps Must Leave Duluth on May 1

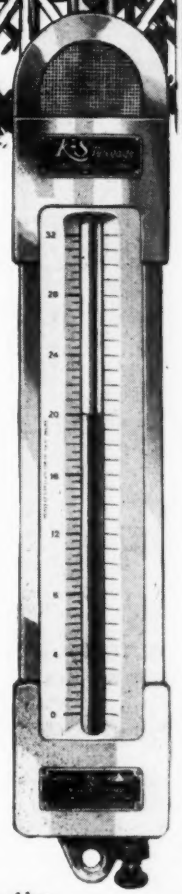
DULUTH, Minn., Dec. 8.—City officials of Duluth, Minn., recently decided to eliminate all gasoline curb pumps from its streets. It bases its action upon an opinion given to its city attorney, John B. Richards by G. A. Youngquist, attorney general of the state.

"Has the city council of Duluth authority to license gasoline filling stations at curb on streets, such license being revocable at the will of the city council?" was the question submitted to the attorney general by the city planning department.

"I think it may be regarded as a fair statement of law that a municipality, in the absence of express statutory authority, may not lease portions of the public street for private business purposes," was the reply received from the state's attorney.

Gasoline pumps are to be removed from the curb at the end of the current license year, May 1, 1928. The attorney general's opinion quoted law extensively and made exhaustive legal citations, all having to do with the responsibility of a city administration to the public in keeping the streets (from side to side and end to end) clear and open for public use.





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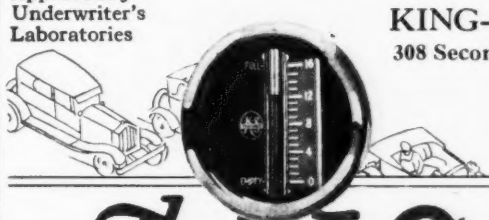

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Standard factory equipment on three-fourths of all cars selling for $700 or more.

Crude Oil Prices (in Effect Dec. 10)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$3.60
Bradford District Oil in National Transit Lines (Bradford District)	3.60
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.50
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.50
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.40
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	3.25
Cabell Grade in Eureka Pipe Lines (West Virginia)	1.45
Corning Grade in Buckeye Pipe Lines (Ohio)	1.80
Corning, O., heavy grade	1.70
Somerset Oil in Cumberland Pipe Lines (Kentucky)	1.75
Ragland Grade in Cumberland Pipe Lines (Kentucky)	.95

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines	$1.75

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective July 27, 1928

Wooster (Oct. 17)*	$1.77	Princeton	$1.55
Lima	1.60	Illinois	1.55
Waterloo	1.20	Plymouth	1.28
Indiana	1.37	West Kentucky	1.63

*Wooster crude run prior to Oct. 17, 1928 takes price of $1.67.

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Petrolia	$2.00
Oil Springs	2.07

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective July 26, 1928

Below 25	$0.60	35-35.9	$1.31
25-25.9	0.67	36-36.9	1.36
26-26.9	0.74	37-37.9	1.41
27-27.9	0.81	38-38.9	1.46
28-28.9	0.88	39-39.9	1.51
29-29.9	0.95	40-40.9	1.56
30-30.9	1.02	41-41.9	1.61
31-31.9	1.09	42-42.9	1.66
32-32.9	1.16	43-43.9	1.71
33-33.9	1.21	44 and above	1.76
34-34.9	1.26		

Humble Oil & Refining Co. Prices

(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

July 26, same schedule as Prairie.

Mirando, Tex	$1.00

Magnolia Petroleum Co.

(In Oklahoma, Kansas and North and East Central Texas)

July 26, Magnolia posted in above fields and in Panola Co., same schedule as Prairie, except these grades posted Aug. 2

Below 25	$0.60	27-29.9	$0.75
25-25.9	0.67	30-30.9	0.90
26-26.9	0.74	31-31.9	1.05
Glasscock, Crane, Upton, Winkler Counties			0.65
Chalkfield (Howard Co.)			0.80
Iatan district			0.93
Corsicana heavy			1.00

Carter Oil Co.

(Oklahoma and Kansas)

July 26, same schedule as Prairie except Carter does not post oil below 25.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Effective July 26, 1928

Hutchinson and Carson Counties:

Below 32	$0.69	38-38.9	$1.06
32-32.9	0.76	39-39.9	1.11
33-33.9	0.81	40-40.9	1.16
34-34.9	0.86	41-41.9	1.21
35-35.9	0.91	42-42.9	1.26
36-36.9	0.96	43-43.9	1.31
37-37.9	1.01	44 and above	1.36

Wheeler County:

Below 30	$0.65	37-37.9	$1.11
30-30.9	0.72	38-38.9	1.16
31-31.9	0.79	39-39.9	1.21
32-32.9	0.86	40-40.9	1.26
33-33.9	0.91	41-41.9	1.31
34-34.9	0.96	42-42.9	1.36
35-35.9	1.01	43-43.9	1.41
36-36.9	1.06	44 and above	1.46

Gray County:

Below 29	$0.68	37-37.9	$1.21
29-29.9	0.75	38-38.9	1.26
30-30.9	0.82	39-39.9	1.31
31-31.9	0.89	40-40.9	1.36
32-32.9	0.96	41-41.9	1.41
33-33.9	1.01	42-42.9	1.46
34-34.9	1.06	43-43.9	1.51
35-35.9	1.11	44 and above	1.56
36-36.9	1.16		

WEST TEXAS

Humble Oil & Refining Co.

Effective July 26, 1928

Winkler, Crane, Upton, Crockett, and Pecos Counties	$0.65

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto and **Cotton Valley.

Effective Aug. 2, 1928

Below 28	$0.81	36-36.9	$1.36
28-28.9	0.88	37-37.9	1.41
29-29.9	0.95	38-38.9	1.46
30-30.9	1.02	39-39.9	1.51
31-31.9	1.09	40-40.9	1.56
32-32.9	1.16	41-41.9	1.61
33-33.9	1.21	42-42.9	1.66
34-34.9	1.26	43-43.9	1.71
35-35.9	1.31	44 and above	1.76

**Cotton Valley, below 36, $0.75. Beginning with 36-36.9, same schedule as above.

Smackover, below 24	$0.75
do 24 and above	.90
Bellevue	1.25
*Urania, La	.90
†East El Dorado	0.75

*Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

Smackover prices posted on Feb. 7 by S. O. La., Gulf, Shreveport-El Dorado Pipe Line, Atlantic Oil Producing Co. and The Texas Co.; on Feb. 8 by Magnolia; on Feb. 6 by La. Oil Refg. Corp.

Aug. 8 The Texas Co., same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.60; 25-25.9, $0.67; 26-26.9, $0.74; 27-27.9, $0.81.

Aug. 7 Magnolia Petroleum met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective Aug. 2, 1928

Below 28	$0.75	30-30.9	$0.87
28-28.9	0.79	31-31.9	0.91
29-29.9	0.84	32 and above	0.95

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective March 14, 1927

Grades A	$1.20	29-29.9	$1.25
Grades B:		30-30.9	1.27
Below 25	1.15	31-31.9	1.29
25-25.9	1.17	32-32.9	1.31
26-26.9	1.19	33-33.9	1.33
27-27.9	1.21	34-34.9	1.35
28-28.9	1.23	35 and above	1.37

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only

Oil Trademarks for Copyright

The following are trademark applications pertinent to our field pending in the United States Patent office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C., trade-mark specialists.

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"PURON" No. 271,998. The Pure Oil Company, Chicago, Ill. For fuel oils, and lubricating oils and greases.

"ROLLEX" No. 272,000. The Pure Oil Co., Chicago, Ill. For fuel oils, and lubricating oils and greases.

"TIOL" No. 272,003. The Pure Oil Co., Chicago, Ill. For fuel oils, and lubricating oils and greases.

"WOOLAROC" No. 265,688. Phillips Petroleum Co., Bartlesville, Okla. For gasoline and lubricating oils.

"SUPER X MOTOR OIL" No. 269,495. Utility Oil Corporation, Long Island City, N. Y. For petroleum products.

"PRIMOL" No. 269,804. Stanco Inc., Wilmington, Del. For highly refined white lubricating oils and non-sticking oils for confectioners' and bakers' use.

"STAR-O-PENN" No. 271,328. White Star Refining Co. of Delaware, Detroit, Mich. For lubricating oils and greases.

"DARK POCO" No. 271,981. The Pure Oil Co., Chicago, Ill. For fuel oils, lubricating oils and greases, and steam-cylinder oils.

"PUROLA" No. 271,996. The Pure Oil Co., Chicago, Ill. For fuel oils, and lubricating oils and greases.

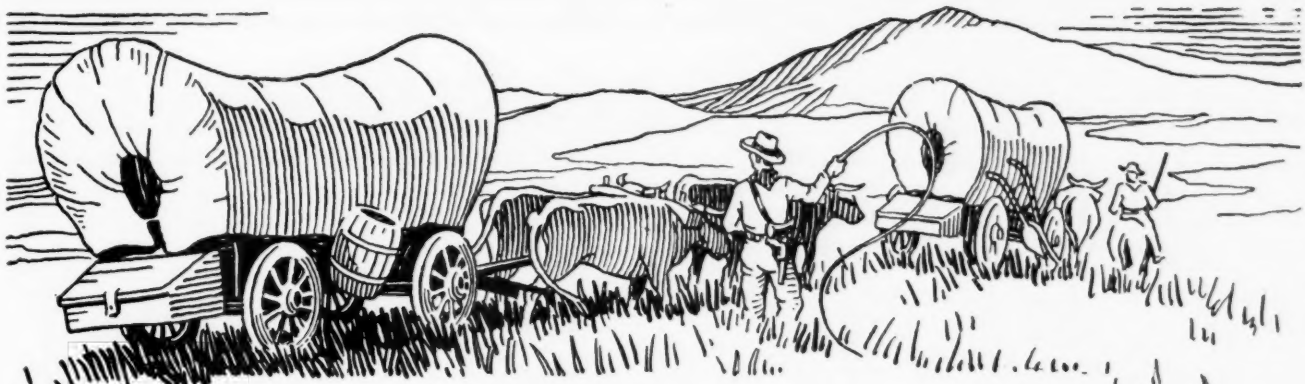
"ENERGY" No. 271,982. The Pure Oil Co., Chicago, Ill. For fuel oils, and lubricating oils and greases, and gasoline.

"M-MINERAL" No. 271,987. The Pure Oil Co., Chicago, Ill. For fuel oils, and lubricating oils and greases.

Venezuelan Crude Closely Held

NEW YORK, Dec. 8.—The spot market for Venezuelan crude oil continues relatively tight. Demand is exceeding to some extent the supply and spot cargoes, according to well informed sources, are extremely hard to obtain. Contract commitments are said to be large and it's only occasionally suppliers have any surplus which they are willing to dispose of in the spot market. One large supplier of Venezuelan crude reported this week the loading of nine steamers in three days. It also has 40 steamers scheduled for loading in January. Practically all the oil involved is under contract.

Strange as it may seem, spot cargoes when available can be picked up at a few cents under the price governing the majority of contracts. Most contracts for 1929 shipment are taking a minimum of $0.90 a barrel, f.o.b. deepwater in the Lake Maracaibo region. Several spot transactions have been closed recently at around $0.85 to $0.87 a barrel, but most of this oil has been going to foreign companies.



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Crude Oil Prices (in Effect Dec. 10)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective March 14, 1927

Grades A	$1.20	*Grades B	$1.15
‡Grades B (light crude):			
35-35.9	$1.37	38-38.9	$1.43
36-36.9	1.39	39-39.9	1.45
37-37.9	1.41	40 and above	1.47

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on all below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective July 26, 1928)

‡Salt Creek 29-29.9	$0.95
" " 30-30.9	1.02
" " 31-31.9	1.09
" " 32-32.9	1.16
" " 33-33.9	1.21
" " 34-34.9	1.26
" " 35-35.9	1.31
" " 36-36.9	1.36
" " 37 and above	1.41
Elk Basin	1.48
Grass Creek light	1.48
Big Muddy	1.33
Lance Creek	1.48
Rock Creek	1.33
Mule Creek	1.10
Rex Lake	1.10
‡Osage	1.48
‡Cat Creek, Mont.	1.48
Sunburst, Mont.	1.65
‡Hogback, N. Mex.	1.53
Artesia, N. Mex.	1.08

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

***Standard Oil Co. of California**

Gravity	Signal Hill Seal Beach Alamitos Heights Huntington Beach	Inglewood Torrance	Olinda-Brea Canon Richfield	Athens-Rosecrans Dominguez	Whittier La Habra	Coyote Hills	Santa Fe Springs	Newhall McKittrick	†Kern River	Midway Sunset Buena Vista & Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Montebello	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	....	$ .85	$ .85	....	$ .75	$ .50	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85	$ .85
15-15.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
16-16.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
17-17.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
18-18.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
19-19.9	.85	.85	.85	....	.85	.85	....	.75	.50	.75	.75	.75	.75	.85	.85	.85
20-20.9	.85	.85	.85	....	.85	.85	....	....	....	.77	.77	.77	.77	.86	.85	.85
21-21.9	.89	.89	.89	....	.88	.88	.89	....	....	.79	.79	.79	.79	.89	.86	.86
22-22.9	.93	.93	.93	....	.91	.91	.92	....	....	.82	.82	.82	.82	.92	.87	.80
23-23.9	.97	.97	.97	....	....	.94	.95	....	....	.86	.86	.85	.85	.95	.90	.97
24-24.9	1.01	1.01	1.01	1.01	....	.97	.98	....	....	.90	.90	.88	.88	.98	.93	.94
25-25.9	1.05	1.05	1.05	1.05	....	1.00	1.01	....	....	.95	.95	.91	.91	1.01	.95	.98
26-26.9	1.09	1.09	1.09	1.09	....	1.04	1.04	....	....	1.00	1.00	.94	.94	1.04	.97	1.02
27-27.9	1.13	1.13	1.13	1.13	....	1.08	1.07	....	....	1.05	1.05	.98	.97	1.07	....	1.06
28-28.9	1.17	1.17	1.17	1.17	....	1.12	1.10	....	....	1.10	1.10	1.02	....	1.10	....	1.10
29-29.9	1.21	....	1.21	1.21	....	1.16	1.15	....	....	1.16	1.16	1.06	....	1.13	....	1.14
30-30.9	1.25	....	1.25	1.25	....	1.20	1.20	....	....	1.22	1.22	1.10	....	1.16	....	1.18
31-31.9	1.30	....	....	1.30	....	....	1.25	....	....	1.28	1.28	1.14	....	....	....	1.23
32-32.9	1.35	....	....	1.35	....	....	1.30	....	....	1.34	1.34	1.18	....	....	....	1.28
33-33.9	....	....	....	1.41	....	....	1.35	....	....	1.40	1.40	1.22	....	....	....	....
34-34.9	....	....	....	1.47	....	....	1.40	....	....	....	1.46	1.26	....	....	....	....
35-35.9	....	....	....	1.53	....	....	1.45	....	....	....	....	1.30	....	....	....	....
36-36.9	....	....	....	1.59	....	....	1.50	....	....	....	....	....	....	....	....	....
37-37.9	....	....	....	1.65	....	....	1.55	....	....	....	....	....	....	....	....	....
38-38.9	....	....	....	1.71	....	....	1.60	....	....	....	....	....	....	....	....	....
39-39.9	....	....	....	1.77	....	....	1.65	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	1.83	....	....	....	....	....	....	....	....	....	....	....	....
41-41.9	....	....	....	1.89	....	....	....	....	....	....	....	....	....	....	....	....
42-42.9	....	....	....	1.95	....	....	....	....	....	....	....	....	....	....	....	....

*Santa Maria and Ventura postings are by Union Oil Co. Union Oil Co. posts same prices in all above fields as Standard except in Montebello and Wheeler Ridge. It also posts Elwood Terrace at same price as Rosecrans—Dominguez and also posts Santa Maria (Orcutt) and Ventura.

†Kern River down to 12° gravity is 50c; 11-11. 9 is 45c.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	Dec. 10	Dec. 3
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cv.	$0.60	$0.60
Silicate of Soda 40 deg. drums cwt.	$0.80	$0.80
Sal Soda wks.	$0.90-1.00	$0.90-1.00
Caustic Soda 76% solid, cwt.	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00
Oleum 20%, fuming sulfuric, tank cars, wks.	$18.50	$18.50
Sulfur, flowers of cwt.	$3.10-4.00	$3.10-4.00
Liquid Chlorine, tank cars, wks. lb.	3.00-4.50	3.00-4.50
Litharge, powered, casks, cwt.	9.00	9.00

Compounders' Supplies

	Dec. 10	Dec. 3
Vegetable Oils		
Linseed carloads, spot lb.	10.20	10.20
Tanks, spot	9.40	9.40
Soya Bean, Tanks, coast, lb.	9.75	9.75
Oleic Acid		
Distilled, tanks lb.	9.25	8.75
Distilled, bbls. lb.	10.00	9.50
Saponified, tanks lb.	9.50	9.00
Saponified, bbls. lb.	10.25	9.75
Lard Oils		
Prime Winter Strained lb.	16.00	16.00
Extra Winter Strained lb.	14.00	14.00
Extra lb.	13.50	13 25
Extra No. 1 lb.	13.00	13.00
No. 1 lb.	13.00	13.00
No. 2 lb.	12.25	12.25
Tallow oil lb.	12.25	12.25
Neatsfoot Oil		
Pure, bbls. lb.	15.25	15.25
Extra, bbls lb.	13.25	13.25
No. 1 bbls lb.	13.00	12.75
Cold Pressed lb.	19.00	19.00
Fish Oils		
Menhaden Oil		
Light Pressed gal.	66-68	66-68
Light Pressed, tank cars, N. Y. gal.	59-60	59-60
White bleached gal.	73-74	73-74
Yellow bleached gal.	70-72	70-72
Whale, extra winter bleached, gal.	84	84
Naval Stores		
Steam distilled turpentine, N. Y. gal.	59	59
Steam distilled turpentine, Savannah gal.	54	54
Gum turpentine, N. Y. gal.	62	62
Gum turpentine, f.o.b. cars Savannah gal.	58	58
Wood Rosin F, N. Y. bbl.	$8.20	$8.20
Wood Rosin F, Savn'h. bbl.	$7.40	$7.40
Gum Rosin B, N. Y. bbl.	$9.00	$9.15
Gum Rosin B, f.o.b. cars Savannah bbl.	$8.30	$8.40
Rosin oil. pure gal.	62	62
Rosin oil, compounded gal.	51	51
Pine Tar		
Kiln burnt bbl.	$13.00-14.00	$13.00-14.00
Retort bbl.	$13.50-14.50	$13.50-14.50
Alcohol		
Denatured, Formula 5, in bbls., per gal.	55-62	55-62

*Nominal.

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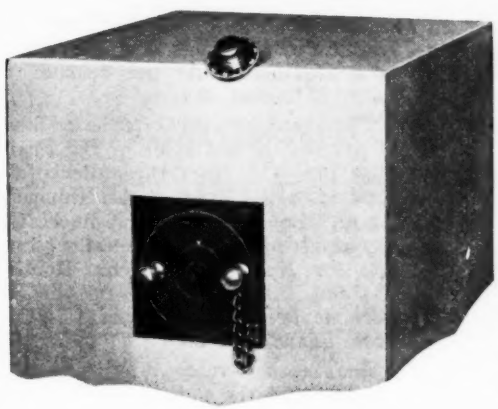

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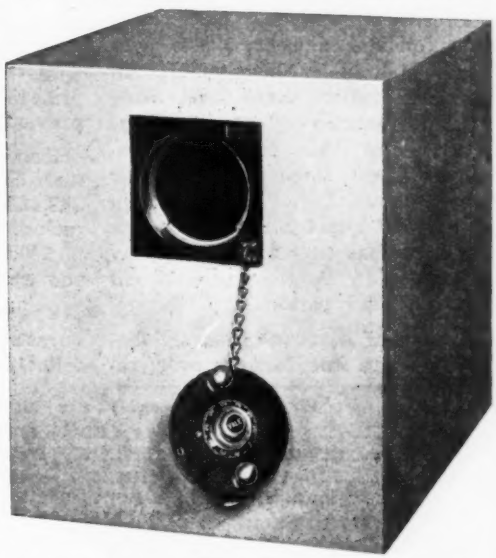

Views of chest installed in concrete block, showing door closed with dial removed, and chest open ready for use.

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OIL STOCKS AND FINANCES

National Petroleum News

Dividends of Standard Oil Group Establish Record in 1928

NEW YORK, Dec. 8

AN ESTIMATE of dividend payments by companies comprising the Standard Oil group indicates that for 1928 a total of $221,567,410 will be distributed in cash as against $213,617,940 in 1927, according to figures compiled by Carl H. Pforzheimer & Co., specialists in Standard Oil securities. The sum paid out in 1928 is the largest amount disbursed in any one year since dissolution of the old Standard Oil Company in 1911.

Dividend payments in the fourth quarter of 1928 totaled $64,877,432, an increase of $14,000,000 over the previous quarter and $9,000,000 over the same period of last year. All regular declarations have been made with the exception of Prairie Pipe Line Co. and this company's disbursement is estimated at the regular quarterly rate of $3.50 a share in both the final quarter and the year's estimate. No account is taken of any disbursement by Anglo-American Oil Co. in the final period.

Estimates of current quarterly disbursements are the largest ever recorded in any single quarter since dissolution. Payments in the final quarter of the year include semi-annual dividends by the Illinois Pipe Line Co. and Solar Refining Co. as well as extra dividends by Vacuum Oil Co., Standard Oil Co. of California, Standard Oil Co. of Kentucky, Standard Oil Co. of Nebraska and Chesebrough Mfg. Co.

Several of the principal companies increased their cash disbursements substantially during 1928 but such increased payments were offset by the omissions or lowering of dividends by other companies. Standard of California paid $37,782,294 this year as compared with $33,059,507 in 1927 while Vacuum Oil Company paid $18,-912,415 against $12,494,160 in the previous year.

Standard Oil Co. of New Jersey distributed $36,475,832 in 1928 against $38,423,860 in 1927, the latter amount including a payment of approximately $3,500,000 on the preferred stock issue which was retired in March, 1927.

The record of quarterly cash disbursements during the last few years follows:

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
1928	$48,927,670	$57,694,206	$50,068,102	$64,877,432	$221,567,410
1927	55,873,413	54,291,615	47,728,440	55,724,472	213,617,940
1926	40,580,317	50,618,451	46,427,278	62,685,548	200,327,594
1925	34,355,618	41,905,728	35,140,584	42,104,169	153,506,099

Holmes Reports Texas Co. Earnings Doubled

NEW YORK, Dec. 8.—Net earnings of The Texas Corp. this year will be more than double the 1927 net profits, R. C. Holmes, its president, wrote stockholders in a letter that accompanied warrants entitling them to subscribe to additional stock. Last year's profits totaled $20,029,405 and Mr. Holmes estimated this year's earnings at $45,000,000, saying:

"The funds we are receiving from this issue of stock will materially increase the earning power of the corporation. While it has not been customary for us to make statements of earnings except after closing of the books annually, we think in this case an estimate of the probable earnings for the year is due stockholders. Our estimate is that notwithstanding the general overproduction of crude oil and resulting low prices for crude and refined products, the net earnings for the calendar year 1928 after federal taxes will be approximately $45,000,000."

Upon the issuance of the new stock The Texas Corp. will have outstanding 9,858,014 $25 shares, its only capital liability. This amount includes the stock set aside for exchange of the remaining few undeposited shares of California Petroleum Corp. stock.

Financial Notes

Independent Oil & Gas Co.—New York Stock Exchange lists 657,799 additional no par shares of capital stock.

Marland Oil Co.—William Jervis, formerly general traffic manager and in charge of railway sales of The Texas Co., has been elected a vice-president of Marland.

Blair Associates Buy Into Prairie Oil

NEW YORK, Dec. 8.—Purchases of Blair & Co., Inc., and associates in the Prairie Oil & Gas Co. amount to approximately 11 per cent of the 2,419,184 issued shares.

The group recently purchased about 14 per cent of the stock of the Prairie Pipe Line Co. from three Rockefeller trust funds—the General Education Board, Laura Spellman Rockefeller Memorial and the Rockefeller Institute for Medical Research. Holdings of John D. Rockefeller and his son were not acquired, it is said in New York financial circles.

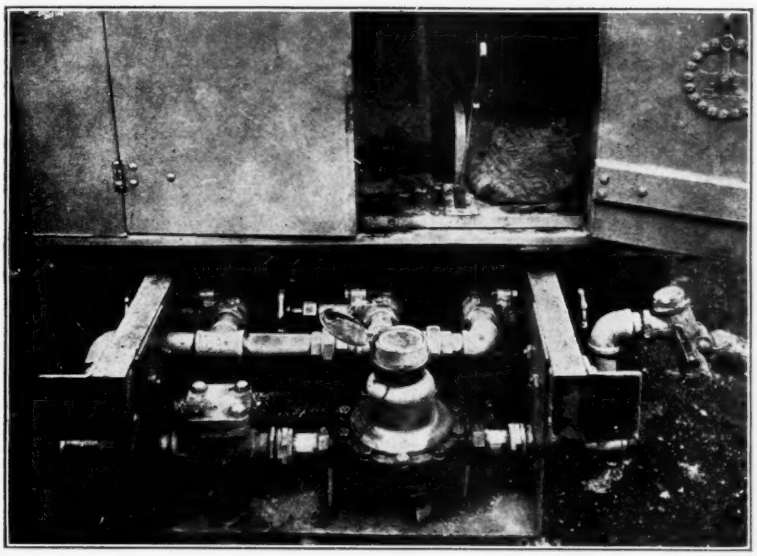
The market value of the stock in the two Prairie companies cost about $48,000,000, according to reports. Associated with Blair & Co. are the Cutten-Fisher interests.

Hurll in Jones' Seat On S.O.N.J. Board

NEW YORK, Dec. 8.—Peter Hurll of London has been elected a director of the Standard Oil Co. (N. J.) to fill the vacancy on the board caused by the death of George H. Jones. Mr. Hurll will continue his office in London where he has been the New Jersey company's representative several years.

Mr. Hurll is a lubricating oil man and has been in Europe representing Standard interests 20 years. He became assistant director of the Bedford Petroleum Co., the Standard of New Jersey's foreign lubricant subsidiary in Paris in 1908. Two years later he was appointed managing director and retained that post until he transferred to London in 1925. He also was managing director of L'Economique Societe Anonyme de Distribution de Petrole et Essence, distributor in France of all petroleum products.

Your Tank Wagon



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Keystone Oil and Gasoline Meters are giving satisfactory service on numerous truck tanks throughout the country. Both buyer and distributor are assured of accurate measurements.

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PITTSBURGH EQUITABLE METER COMPANY

PITTSBURGH, PA.

Transactions in Oil Shares on New York Stock Exchange

1927 High	1927 Low	1928 High	1928 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Dec. 8 Sales	First	High	Low	Last	Change
37¾	27⅝	43⅞	27⅛	(sh) 922,075	N.P.	Amerada Corp.	50cQ	Oct. 31, 28	26,200	40⅜	41⅞	35¾	35¾	— 3¾
82½	35⅛	85	51¼	(sh) 209,180	N.P.	American Republics Corp.	....	....	11,600	71⅞	71⅞	58⅛	58½	—13
50¾	35	53⅜	37½	$56,000,000	$ 25	Associated Oil	50cQ	Sept. 29, 28	280	48	48	47¾	48	+ ¼
....	....	63¼	50¾	50,000,000	25	Atlantic Refining (New stock)	25cQ	Dec. 15, 28	267,000	55	59½	†50¾	51⅞	— 2⅞
119	115½	118¼	113½	20,000,000	100	do pfd	$1.75Q	Nov. 1, 28	580	116¼	117¼	116	117¼	+ 1¼
35½	20¾	53	20⅛	30,971,225	25	Barnsdall Corp. A	50cQ	Oct. 31, 28	144,000	45⅞	45⅞	38⅛	38⅛	—10⅜
32½	20½	51⅛	22	581,850	25	do B	50cQ	Oct. 31, 28	200	42¼	42¼	42¼	42¼	— 8¼
18¼	14	23½	12¼	946,518	N.P.	Beacon Oil	....	....	89,100	23⅝	24½	21	21⅛	— ⅜
32⅞	20	35	24	51,524,150	25	California Petroleum	25cQ	Oct. 1, 28	40	27	28	27	28	— 6¼
96¾	65	94⅞	70	20,980,400	100	General Asphalt	....	....	26,900	80⅝	81¼	71	71	—11
144⅞	107¼	141½	111	6,662,200	100	do pfd	$1.25Q	Dec. 1, 28	900	120	120	113	113	—11
175¾	60½	167	118⅝	25,000,000	100	Houston Oil	....	....	5,700	130	133½	†118⅜	124	— 7
32¾	17⅜	37½	21¾	(sh) 659,000	N.P.	Independent Oil & Gas	37½cQ	Oct. 31, 28	39,500	34	34½	31	31	— 3⅞
12½	7⅜	39⅜	9	$3,582,670	$ 10	Indian Refining	....	Dec. 15, 20	60,200	34¾	35¾	27	27	— 7½
12	7¼	33½	8½	4,550,110	10	do ctfs	....	....	19,300	31	31⅞	26¼	26¼	— 5¼
112	99	250	101	2,296,400	100	do pfd	....	Dec. 15, 21	500	170	170	163	163	—22
37¾	20½	39½	27⅝	(sh) 3,992,234	N.P.	Lago Oil & Transport	75cQ	Nov. 1, 28	3,000	34½	34½	30½	30½	— 4¼
18⅜	10	19¾	9⅜	(sh) 1,187,003	N.P.	Louisiana Oil Refining	....	....	47,800	16⅞	17½	14	14	— 3¾
97	85¼	101	78	$4,000,000	$100	do pfd	$1.50Q	Nov. 15, 28	500	91	91	89¾	90	— 1
22¾	12	25½	12½	(sh) 330,000	N.P.	Maracaibo Oil	....	....	3,300	18½	19¼	15¼	15¼	— 4⅜
58½	31	49¾	33	(sh) 2,316,851	N.P.	Marland Oil Co.	....	Mar. 31, 27	125,100	46¼	47⅝	40⅝	42	— 4½
320	200	360	250	$45,942,800	$100	Mexican Petroleum	$3Q	Oct. 20, 28	.....	....	....	....	....	.....
....	....	....	....	12,000,000	100	do pfd	$2Q	Oct. 20, 28	.....	....	....	....	....	.....
9¼	3	7²⅜	4⅝	(sh) 995,500	N.P.	Mexican Seaboard	....	Nov. 15, 24	343,300	70	73	48	48	—20⅝
39⅝	25⅛	44½	25⅛	(sh) 1,857,461	N.P.	Mid-Continent	....	Aug. 1, 27	101,000	41⅞	43	36	36¾	— 5⅜
105	97	115⅛	103¼	$6,718,000	$100	do pfd	$1.75Q	Dec. 1, 28	100	115	115	115	115	+ 3¾
3¾	1⅝	7⅜	2⅜	24,060,470	10	Middle States	....	July 1, 23	70,800	6¾	7	5¾	5¾	— 1¼
2¾	1¼	5⅛	1½	5,739,750	10	do ctfs	....	....	13,100	4⅞	5	4¼	4¼	— ⅝
1⅞	1	2¼	1	(sh) 3,500,000	N.P.	Pacific Oil	....	....	24,000	1⅜	1⅜	1½	1½	— ⅛
65⅞	40½	55½	38¼	$50,000,000	$ 50	Pan American P. & T.	....	Oct. 20, 27	8,500	52½	53½	46	46	— 7¾
66⅜	40¼	58⅞	37⅜	121,100,000	50	do B	....	Oct. 20, 27	300,000	54¼	55½	45	45	—10¾
37⅞	16¾	59	15½	(sh) 400,000	N.P.	Pan American Western B	....	Jan. 30, 27	1,300	17⅜	17⅜	17¼	17¼	— ⅝
18⅞	8	21⅜	11½	(sh) 199,370	N.P.	Panhandle P. & R.	....	....	3,400	14¼	14¼	12	12	— 3
83	54	106¼	70	$2,935,200	$100	do pfd	....	July 2, 23	500	80	80	75	75	— 5¾
60¼	36¼	53⅞	35¼	(sh) 2,406,796	N.P.	Phillips Petroleum	37½cQ	Oct. 1, 28	80,700	49½	50⅝	44¼	44¼	— 6⅝
1¼	½	4¼	½	$29,622,925	$ 25	Pierce Oil	....	....	16,300	3	3¼	2¾	2¾	— ⅜
24	13½	50	16¼	15,000,000	100	do pfd	....	Feb. 1, 22	2,300	36½	36½	33	33	— 4
5½	2½	6¾	3¼	(sh) 2,500,000	N.P.	Pierce Petroleum	....	....	16,700	5⅞	6	5	5	— 1
33⅞	16⅜	29⅝	16	$37,450,850	$ 50	Producers & Refiners	....	Sept. 15, 23	6,000	26	26⅛	23	23	— 4¼
50	36⅞	47¾	41	2,845,350	50	do pfd	....	May 1, 25	150	46½	46½	44¼	44¼	— 3¼
33⅛	25	31⅝	19	75,952,250	25	Pure Oil Co.	25cQ	Dec. 1, 28	68,100	28¼	29¼	25⅝	25⅝	— 3½
115½	111⅜	115	108	13,000,000	100	do 8% pfd	$2Q	Oct. 1, 28	300	113¼	113½	113	113⅜	+ ⅛
28⅜	25⅜	56	24	$43,764,450	$ 25	Richfield Oil	50cQ	Nov. 15, 28	189,500	51	52	43⅛	43⅛	— 7⅞
54½	44¼	64	44⅝	(sh) 585,293	13.40	Royal Dutch N. Y. shares	$1.879	Aug. 3, 28	6,900	53⅞	61½	52⅜	52⅜	— 2⅜
47⅞	41⅜	57⅛	40⅜	(sh) 67,300	£2	Shell Transport & T.	$1.455	July 23, 28	.....	....	....	....	....	.....
31¾	24⅜	39⅜	23¼	(sh) 10,000,000	N.P.	Shell Union Oil	35cQ	Sept. 30, 28	16,900	36⅜	37	26¾	27	— 4
26⅜	14¼	27½	18½	$7,208,080	$ 10	Simms Petroleum	40c	Dec. 15, 28	23,100	24¼	24⅞	21⅜	21⅜	— 3⅝
22⅜	15	46¾	17⅜	(sh) 4,503,031	N.P.	Sinclair Consolidated	....	May 31, 24	711,100	44	44⅜	35	35½	— 9⅜
104½	97	110	102½	$16,310,100	$100	do pfd	$2Q	Nov. 15, 28	900	108¼	108¾	108	108	— ½
37⅜	24⅛	42⅝	25	27,396,590	25	Skelly Oil Co.	50cQ	Dec. 15, 28	52,800	38⅞	39½	34½	34½	— 5⅜
60¾	50⅛	78½	53	(sh) 13,016,434	N.P.	S. O. California	‡62½cQ	Dec. 15, 28	198,200	73½	75⅞	66¾	66¾	— 8½
41⅜	35⅛	59⅜	37⅜	$610,195,375	$ 25	S. O. New Jersey	‡25cQ	Dec. 15, 28	36,910	56⅜	58	50⅜	50⅜	— 7
34⅛	29¾	41⅞	28¾	431,973,275	25	S. O. New York	40cQ	Dec. 15, 28	57,150	40⅞	42⅛	37	37⅛	— 4½
34⅞	30	77	31½	(sh) 1,300,532	N.P.	Sun Oil	‡25cQ	Dec. 15, 28	6,300	74	74	62¾	62¾	—12¼
101⅜	99	109½	100	$5,000,000	$100	do pfd	$1.50Q	Dec. 1, 28	20	105½	105½	105½	105½	— ½
6½	3⅛	14½	2½	(sh) 1,186,078	N.P.	Superior Oil Corp	....	Dec. 20, 20	273,500	11⅞	12½	8⅞	9⅝	— 3⅛
58	45	74⅝	50	$210,577,050	$ 25	The Texas Corp	75cQ	Oct. 1, 28	268,200	68	68⅞	63⅜	63⅞	— 5⅛
18⅞	12	26⅝	12½	8,380,340	10	Texas Pacific Coal & Oil	....	Jan. 3, 28	309,200	21½	22½	17½	17⅞	— 4⅝
29⅛	19	40½	19⅝	(sh) 2,168,498	N.P.	Tide Water Oil Co.	20cQ	Sept. 29, 28	44,600	39⅞	*40½	33	33	— 7⅜
90⅛	85	100⅛	87	$20,705,200	$100	do 5½% pfd	$1.25Q	Nov. 15, 28	5,400	97½	*100⅛	97¼	97½	— 2½
19⅛	15¾	24¾	14¾	(sh) 4,824,766	N.P.	Tide Water Associated	....	Aug. 1, 27	108,700	23⅜	24	20	20	— 3¾
90¾	85	91⅞	82⅛	$72,745,958	$100	do pfd	$1.50Q	Oct. 1, 28	8,600	91	*91¾	88⅝	88⅝	— 2⅞
10⅝	3¾	14½	7	(sh) 3,842,029	N.P.	Transcontinental Oil	....	....	243,600	12¼	13¼	10¼	10¼	— 1¼
56½	39⅜	58	42¾	$40,841,100	$ 25	Union Oil of California	50cQ	Nov. 10, 28	9,200	54⅞	55½	49⅛	49⅛	— 6¾
127½	94	128⅛	110	31,061,200	100	Union Tank Car Co.	$1.25Q	Dec. 1, 28	600	124	124	122⅞	123	0
34½	24½	44⅞	26	(sh) 357,197	N.P.	Warner Quinlan	50cQ	Oct. 1, 28	22,100	41⅜	41⅞	38⅜	38⅜	— 3⅝
27½	20	38	20⅜	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	Oct. 20, 28	35,000	37	37¼	34	34½	— 2½
....	....	22½	18⅜	(sh) 418,967	N.P.	Wilcox Oil & Gas	....	May 10, 28	1,400	21	21	20½	20½	— ¼

*New High †New Low ††Ex-dividends ‡Also extras s-Stock Total Sales 4,559,130

Pittsburgh Stock Exchange

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Change
....	....	4	2¼	N.P.	Ark. Nat. Gas (new)	12,195	3½	3¾	3⅜	3½	+ ⅛
....	....	7¾	6¾	N.P.	do pfd	3,823	7⅝	7¾	7½	7½	0
98¾	80¾	130	90¾	100	Colombia Gas	.....	....	....	....	....	.....
107⅞	100	124	107	100	do pfd	20	107	107	107	107	.....
15	7⅛	10	6⅞	10	Devonian Oil	365	8¾	9	8	8	— ¾
....	....	15	9	10	Dixie Gas & Util.	.....	....	....	....	....	.....
....	....	95	75	100	do pfd	.....	....	....	....	....	.....
117½	115	116	115	100	Duquesne Light pfd.	.....	....	....	....	....	.....
....	....	85	80½	100	Fayette County Gas.	.....	....	....	....	....	.....
12¼	6	22	12	N.P.	Houston Gulf Gas	.....	....	....	....	....	.....
59¾	37¼	66	48⅜	$ 25	Lone Star Gas	2,286	65¼	65¼	64	64	— 1½
....	....	38	35	25	Petroleum Exploration	100	35	35	35	35	+ 1½
....	....	.50	.50	....	Phoenix Oil pfd	.....	....	....	....	....	.....
3⅛	3	4⅞	3	5	Pittsburgh Oil & Gas.	.....	....	....	....	....	.....
8	5⅛	7¼	5½	10	Salt Creek Cons.	460	5⅞	5⅞	†5½	5½	— ¼
26½	17	22	16½	10	Tidal Osage	.....	....	....	....	....	.....
43	33	40	30½	N.P.	Waverly Oil Wks. A	105	37¾	39	37¾	39	0
....	....	19	16	$ 25	Wiser Oil	400	16	16	16	16	0

*New high record †New low.

Pittsburgh Curb Exchange

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Change
....	....	....	....	....	Ark. Gas (old)	.....	....	....	....	....	.....
95	88	150¼	120	25	Gulf Oil	600	150¼	*150¼	150¼	150¼	+ 9¾
....	....	115	115	....	Houston Gulf Gas pfd.	.....	....	....	....	....	.....
10¾	5½	9	4¾	25	Leonard Oil & Dev.	4,400	5½	5½	5½	5½	— ½
....	....	9⅞	9⅞	....	Pennkas Oil & Gas	.....	....	....	....	....	.....
2¼	1¾	....	....	5	Pittsburgh Oil Dev.	.....	....	....	....	....	.....
31	19	30¼	16¾	5	Plymouth Oil	2,070	28½	29⅞	27½	27½	— 1¾
6	5	4¾	4	5	States Oil	.....	....	....	....	....	.....
3⅛	1⅛	4½	2¼	1	Texon Oil & Land	1,200	4	4	4	4	+ ½
23¼	18	18	15	10	Tidal Osage Non-vgt.	.....	....	....	....	....	.....

*New High †New Low x Ex Dividend

Cleveland Stock Market

Dec. 7	Par Value	Bid	Asked
Canfield Oil Co.	100	171	190
do pfd	100	103	....
Fred G. Clark	10	7½	8¾
National Refining	25	36	38
do pfd	100	137	....
Paragon Refining Co.	25	20½	21½
do pfd	N.P.	43½	44¼
do ctf. of deposit	..	18½	19

xEx dividend.

California Market

(*Continued from Page* 127)

in tankers, after being blended with from 25 to 50 per cent of motor fuel, into the export trade, is to some extent responsible for the stiffer spot prices. Major companies are taking the natural gasoline production from their own plants and throwing the lighter product into their crude storage or into their motor fuel. One large buyer is contracting for about 25,000,000 gallons over the coming year to be shipped in tankers.

There is no change in gasoline in export circles and there are few requests recently for quotations. It is still possible to buy U. S. Motor at 8 to 8.25 cents at Los Angeles harbor while 400 end point can be secured at about 9 cents. It is not thought that lower prices can be expected in California unless the tank car price at New York should further weaken. If price at New York should decline to around 10 cents, then the California prices can be expected to weaken to the point that the product can be shipped.

There is no change in the fuel oil market, with the movement in keeping with the season. Many refiners, especially the smaller ones, have contracts in force that takes care of a large part of their production, so it is not necessary to make many spot sales. The larger companies also have many contracts in force, and as they have ample storage facilities, they are not forced to cut the price. It is rather surprising how well this market has held.

The kerosene market is in the hands of a few refiners and the prices vary very little. Most of the refiners do not care for this business, especially to be handled in tank cars, as they do not consider the price is sufficiently attractive. They had rather sell their kerosene distillates on the market.

Tax Revenue Gains In Ontario

TORONTO, Dec. 10.—An increase of 24.5 per cent in motor tourist trade in 1928 over 1927 is reported by the provincial government of Ontario, much of this increase probably being due to American motorists.

A total of $4,607,000 were collected into the coffers of the province through the gasoline tax for the fiscal year ended Oct. 31, 1928, this being a gain of $574,000 over 1927. The tax rate has been the same for the two years.

The Shaffer Oil & Refining Co. has purchased a Fairchild monoplane for company transportation and experimental use. The new ship is a 6-passenger cabin type plane with a maximum speed of 140 miles per hour. The home port of the plane will be at Cushing where the Shaffer refinery is located.

THE OIL INDUSTRY EXCHANGE

Positions Wanted

REFINERY SUPERINTENDENT with years of experience in both operation and construction wishes to make connection with some progressive company. References and history of experience gladly furnished. Address Box 223.

SUPERINTENDENT OR MANAGER. College graduate, 39 years of age, thirteen years experience with construction and operation of all modern equipment, paraffine and asphaltic base crudes. Can organize and personally supervise sales of all petroleum oils and greases. Apply Box 213.

TEN YEARS EXPERIENCE all branches of marketing divisions of oil business. Thoroughly acquainted with market conditions in Ohio, West Va., Michigan, Pennsylvania. Now employed but available January 1st. Address Box 246.

CHEMIST with varied experience in process, experimental and control work, plant and laboratory scale, in large complete refinery, desires new connection in oil industry, foreign or domestic. Supervising experience and ability. Thoroughly practical. Graduate Mass. Inst. Tech. Address Box 245.

YOUNG CHEMICAL ENGINEER (B. S.), having more than two years experience in petroleum industrial research, chiefly in lubricating oil development desires new connection. Would like selling or producing. Single. Excellent references. Address Box 247.

WANTED: An opportunity to expand. Young man age 27 with six years of oil experience. Now employed by major oil company desires to make a connection presenting possibilities for his personal growth. My experience has covered retail, wholesale and export marketing. Thoroughly familiar with light oils, lubes, wax and greases by virtue of actual refinery experience. Can furnish real references and have justifiable reasons for desiring a change. Will travel or change address. For interview write Box 248, care National Petroleum News, Cleveland, Ohio.

Situations Open

AUDITOR WANTED

West Virginia Refinery wants auditor to handle office work of distributing division. Must be now employed with five years experience in accounting department of good company, and familiar with all details of wholesale and retail marketing of refinery products.

Address 244

MEN—INTERESTED SOUTH AMERICAN WORK with large oil, mining companies who pay fare and expenses write for our warranted service offer. South American Service Bureau, 14.600 Alma, Detroit, Mich.

FIRST CLASS PRODUCTION MAN WANTED

Thoroughly experienced in Ohio, Pennsylvania or West Virginia fields. He must be competent to take entire charge of the field operations of the company which is planning an immediate increase in production from its present proven properties owned in fee.

An attractive basis for compensation will be arranged with the man selected. Letters in reply which will be held strictly confidential should give complete data including age, experience and training.

Address Box 242

Situations Open

SALESMEN WANTED. One of our clients needs salesmen in midwest territory including Western Penna., Ohio, Indiana, Illinois, Missouri, Iowa, Kansas and a few in Southern and Western States. Men who are now traveling preferred. Those who are selling oil and gasoline could add this line. No samples to carry. Send full particulars covering experience and territory now covered. Anchor Advertising Agency, Third National Building, Dayton, Ohio.

Professional

L. G. Huntley **J. R. Wylie, Jr.**
Shirley L. Mason

HUNTLEY & HUNTLEY
PETROLEUM GEOLOGISTS AND ENGINEERS

Frick Building **PITTSBURGH, PA.**

Miscellaneous

TESTING OF

Gasoline—Kerosene—Naphtha—Fuel Oil—Lubricating Oils by standard methods.

Prices on application

Rackliffe Petroleum Testing Laboratories
New Britain, Conn.

12 YEARS experience in oil accounting, exclusively. We install systems and make audits. Specialists in analyzing losses common to the oil jobber.

Address Box 237

Want to Buy

BULK PLANT WITH GOOD RETAIL OUTLET WANTED

State price, 1928 gallonage, and full particulars in first letter.

Apply Box 243

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Standard Oil Stocks on New York Curb

1927 High	1927 Low	1928 High	1928 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Sales	Transactions First	Week Ended Dec. 8 High	Week Ended Dec. 8 Low	Week Ended Dec. 8 Last	Change
21⅝	17⅞	22⅜	17	L 4,126,460	L 1	Anglo-American Oil	24.4c	June 6, 28	6,400	18⅜	18½	18	18¼	— ⅛
21½	17⅝	20½	16⅜	.....	L 1	do cts. non-voting	.....	.....	1,200	17⅞	17⅞	17½	17½	0
3¾	⅜	5	1¼	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	1,200	2½	2½	2⅜	2⅜	— ⅛
6½	2½	9¾	3¼	$ 10,000,000	$ 50	do pfd	.....	.....	200	6¼	6¼	6¼	6¼	— ¼
69	50	56	44½	1,000,000	25	Borne Scrymser	‡81S.A.	Oct. 15, 28	.....	.....	.....	.....	.....	.....
60	45	76	58	10,000,000	50	Buckeye Pipe Line	$1Q	Dec. 15, 28	700	67	67	64¾	64¾	— 3⅛
126	76½	161	117¼	3,000,000	25	Chesebrough Mfg	‡$1Q	Sept. 29, 28	800	148	148¼	147	147	— 7¾
22⅝	16¼	23	16	36,123,350	10	Continental Oil	.....	Dec. 15, 27	12,500	19⅜	19⅞	18⅛	18⅛	+ 1¾
137	89	114	79½	1,500,000	50	Cumberland Pipe Line	$1Q	Dec. 15, 28	.....	.....	.....	.....	.....	.....
68⅛	47	88	64⅛	5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, 28	350	72¼	72¼	71	71	— ¾
13½	3½	13	5	16,000,000	100	Galena Signal Oil	.....	June 30, 25	200	7¼	7¼	7¼	7¼	— ¼
59¾	23	87¾	27	4,000,000	100	do new pfd	.....	June 30, 26	.....	.....	.....	.....	.....	.....
60⅛	35½	89¾	35	2,000,000	100	do old pfd	.....	June 30, 26	70	83	83	83	83	0
68½	54	114¾	60	73,685,700	25	Humble Oil & Refining	‡30cQ	Oct. 1, 28	18,500	107⅜	107⅜	95¼	96⅜	—11⅝
182	123¾	290½	176½	20,000,000	100	Illinois Pipe Line	$10S.A.	Dec. 15, 28	950	284	284	261½	266	—20½
64¾	37¾	104	56¾	(sh) 6,591,458	N.P.	Imperial of Canada	‡25cQ	Dec. 1, 28	10,500	91⅞	92	85	85	— 8
94½	61	91⅞	74⅞	$ 5,000,000	$ 50	Indiana Pipe Line	‡$1Q	Nov.15, 28	400	83¾	83¾	81¼	81¼	— 3¾
39	28¼	55	35	(sh) 7,123,544	N.P.	International Petroleum	25c	June 30, 28	58,500	51	51⅞	45½	46½	— 5
24	13¼	32⅜	19⅜	6,363,350	12.50	National Transit Co	25cQ	Dec. 15, 28	2,300	23¼	23½	20¾	21¼	— 2¼
44½	31¼	75	37½	5,000,000	100	New York Transit	.....	July 15, 26	400	70	70	69⅞	69⅞	— ⅛
100	70	125	56½	2,000,000	50	Northern Pipe Line	(a)$3S.A.	July 2, 28	200	66¾	66¾	64	66¾	— 1¼
67⅞	52	83½	58	60,000,000	25	Ohio Oil Co	50cQ	Dec. 15, 28	9,800	80	80	71⅞	72½	— 7⅝
39	12	84	28	10,000,000	25	Penn Mex. Fuel	$75c	Dec. 16, 28	1,300	34⅞	35	32	32	— 5⅞
55½	45⅜	68	46	60,479,000	25	Prairie Oil & Gas	.....	Aug. 31, 27	151,700	62⅝	63¾	53	57	— 5½
190	132	278	172	81,000,000	100	Prairie Pipe Line	$3.50Q	Oct. 31, 28	5,300	262½	271	251	252	—12
201½	175½	216	167	4,000,000	100	Solar Refining	$5S.A.	June 20, 28	100	205	210	205	210	0
27¼	15½	35⅞	12	1,000,000	10	Southern Pipe Line	$2	Dec. 1, 27	800	18	18	16½	17	— 2½
41½	35	81½	36¾	20,000,000	25	South Penn Oil	‡50cQ	Sept. 29, 28	3,400	65⅝	65	62½	62½	— 3⅜
83	55½	100¾	70	3,500,000	100	South West Pa. Pipe Lines	$1Q	Oct. 1, 28	.....	.....	.....	.....	.....	.....
81½	64⅜	95⅞	70⅞	230,788,513	25	S. O. Indiana	‡62½cQ	Dec. 15, 28	51,300	91⅛	91⅜	83⅛	83⅛	— 8¼
20⅞	14⅝	27¾	15	8,000,000	25	S. O. Kansas	.....	June 16, 24	3,700	23	23	21⅞	21⅞	— 1⅜
130	111½	179¾	122¼	17,103,011	25	S. O. Kentucky	$1Q	Sept. 29, 28	3,200	173	174¼	161	163¾	—11⅝
49½	40	54⅞	39⅞	4,601,100	25	S. O. Nebraska	63cQ	Sept. 20, 28	500	51	51	49⅝	49⅝	— 2⅜
87½	72	134	71	14,000,000	25	S. O. Ohio	62½cQ	Oct. 1, 28	3,800	125½	127	115	115	—13
122	117¼	125	116	7,000,000	100	do pfd	$1.75Q	Dec. 1, 28	80	118	118	117¼	117¼	— 2¼
21	14½	26	16	861,466	25	Swan Finch Co	30c	June 30, 28	100	21	21	21	21	— ¾
....	....	101¼	72	126,154,100	25	Vacuum Oil	75cQ	Sept. 20, 28	16,100	95¼	98	92⅛	93⅞	— 3⅛

*New high †New low xEx dividend ‡Also extras. (a)$50 Special Sept. 1, 1928

Independent Oils on New York Curb

1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	Transactions Sales	Week Ended Dec. 8 First	High	Low	Last	Ch'ge
2⅛	.55	1½	.65	$ 5	Amer. Con. Oilfields	12,400	74	74	70	70	— 2
7½	2¾	9½	3⅛	N.P.	Amer. Maracaibo	68,500	8½	8½	6⅝	7	— 1
2¾	1	4¼	2¼	$ 10	Argo Oil	9,900	4	4	3⅜	3¾	— ¼
9¾	6¾	10¼	3⅜	10	Arkansas Nat. Gas	3,700	3⅝	3⅝	3½	3⅝	— ⅜
.....	.....	29⅜	3⅞	.....	Barnsdall deb. war	88,500	20¾	20⅞	15¾	16	— 5¼
40	20½	55	29⅞	N.P.	British American	.....	.....	.....	.....	.....	.....
28¼	15½	23⅞	3⅞	25c	Carib Syndicate N	7,900	4⅛	4½	3⅞	4⅛	+ ⅛
.....	.....	.....	.....	.....	do ctfs. of dep	.....	.....	.....	.....	.....	.....
58¾	40¼	82¾	54	$ 20	Cities Service	90,400	74⅜	*82¾	74⅜	79½	+ 5⅜
95⅜	87	103½	94½	100	do pfd	2,200	99	99	98⅝	99	— ⅜
8⅞	7⅜	9⅜	8⅞	10	do pfd. B	400	9	9	9	9	— ¼
29¼	22½	94	28¼	10	do banker's shares	.....	.....	.....	.....	.....	.....
3⅞	1⅜	2¼	1	1	Colombia Syndicate	5,600	1⅜	1⅜	1⅜	1¼	— ⅛
9¾	6⅜	15⅜	6¼	10	Consolidated Royal	600	6½	6½	†6¼	6¼	— ¼
14⅞	9½	17½	10	N.P.	Creole Syndicate	33,800	12	12	10	10	— 2⅛
3	.50	3¼	.76	N.P.	Crown Central	3,900	2⅜	2⅜	1⅝	1⅝	— ⅞
12	4	33¾	8⅛	N.P.	Darby Petroleum	3,800	29	29	24⅜	25¼	— 3⅞
11⅛	4	13½	7⅞	....	do trust ctfs.	.....	.....	.....	.....	.....	.....
2⅛	.74	22	1	N.P.	Derby Oil & Refining	100	2¼	2¼	2¼	2¼	+ 1
16⅜	4	21⅜	7½	N.P.	do pfd	400	20	20	20	20	— 1
3¾	1	2	1	N.P.	Gibson Oil	.....	.....	.....	.....	.....	.....
2	.40	.53	.15	N.P.	Gilliland ctfs.	.....	.....	.....	.....	.....	.....
118	86¼	165	101⅜	$ 25	Gulf Oil Corp.	28,400	148	155	142⅛	143⅜	— 8⅛
2½	.80	7⅞	1	10	Intercontinent Pet	132,500	2⅜	2¾	1⅞	2	— ¾
2⅛	1⅜	3	1¼	N.P.	Kirby Petroleum	800	1⅞	1⅞	1⅞	1⅞	0
10⅞	5⅛	9⅜	5⅜	N.P.	Leonard Oil & Dev.	2,900	5⅜	5⅜	5¼	5¼	— ½
27½	20	43⅜	20	N.P.	Lion Oil & Refg.	19,800	38	41	31⅝	32½	— 5⅛
59⅜	37	65⅞	48⅝	$ 25	Lone Star Gas	1,300	65¼	65⅜	63¼	63¼	— 1¾
2⅞	.80	1⅞	.54	1	Magdalena Synd	28,100	70	75	65	68	— 1
21½	20⅞	22⅜	22⅛	N.P.	Manhattan Oil	.....	.....	.....	.....	.....	.....
52	12	45	34½	N.P.	Margay Oil	.....	.....	.....	.....	.....	.....
3	1½	40½	40½	$ 10	Mexican-Panuco	.....	.....	.....	.....	.....	.....
12¼	5	8	2¾	N.P.	Mexico-Ohio Oil	200	4	4	4	4	0
1½	1	1¾	.76	$ 1	Mountain & Gulf	2,400	1¾	1¾	1⅜	1⅜	— ⅜
29¼	22⅜	28⅝	19½	10	Mountain Producers	4,400	21⅝	21¼	22⅜	22⅜	+ ¾
5⅞	4⅜	5⅜	4¼	5	New Bradford	3,800	5	5⅜	4⅞	5	0
6¾	4	5½	3	10	New England Fuel	100	3	3	3	3	0
16	9¼	11⅜	7½	1	New Mex. & Ariz	1,200	8⅛	8¼	7½	7½	— 1½
13⅞	9	15½	11½	25	New York Oil	.....	.....	.....	.....	.....	.....
.....	.....	40	39⅛	.....	North Amer. Oil Cons.	.....	.....	.....	.....	.....	.....
12¾	9½	13¼	10	N.P.	North Cent. Texas	400	10⅛	10⅛	10⅛	10⅛	— ⅛
23⅞	21¼	.....	.....	.....	Okla. Nat. Gas ctfs.	.....	.....	.....	.....	.....	.....
9⅜	3¼	6	2¼	N.P.	Pandem	3,400	3	3⅛	2½	2⅝	— ⅜
12⅛	7	15⅜	8½	N.P.	Panapec Oil	2,700	11⅛	11⅛	10	10⅛	— 1⅛
9	7⅝	20	10⅜	$ 25	Paragon Refg.	.....	.....	.....	.....	.....	.....
.37	.25	9	4	N.P.	Peer Oil Corp.	.....	.....	.....	.....	.....	.....
13½	5¼	7¾	4⅞	10	Pennok Oil	.....	.....	.....	.....	.....	.....
.....	.....	5⅜	3⅛	5	Pittsburgh Oil & Gas	.....	.....	.....	.....	.....	.....
24⅜	7	14½	8	25	Red Bank Oil	100	10	10	10	10	0
15½	3½	13	4⅜	N.P.	Reiter-Foster	3,000	8⅞	8⅞	7	7⅜	— 1⅛
28⅜	15	31½	18	$ 25	Richfield Oil pfd	100	24⅜	24⅜	23½	24	— ¼
.....	.....	23	7½	.....	do warrants	.....	.....	.....	.....	.....	.....
7	4½	12	4⅝	N.P.	Ryan Consolidated	2,600	10	10¼	8¼	8¼	— 1½
8	5¼	7¼	5⅜	$ 10	Salt Creek Cons.	1,600	5⅞	5⅞	5⅝	5⅞	+ ⅛
35½	27¼	35	23¼	10	Salt Creek Prod	214,700	25¾	28	25	28	+ 2¼
7	1¾	3½	1	5	Savoy Oil	.....	.....	.....	.....	.....	.....
.....	.....	4⅜	3	1	Texon Oil & Land	42,600	3¾	4	3⅛	3⅛	— 1/16
26½	17	22⅞	13	10	Tidal Osage	1,600	16	16	14	14	— 2
23¾	15	21¼	13⅜	10	do non-voting	1,100	14¾	15⅞	13⅝	13⅝	— 1
92	63½	91⅞	75	100	Transcontinental pfd.	700	90	90	87½	87½	0
23¼	7	68	18	10	Venezuela-Mexico	400	65	*68	65	68	+ 1½
7⅝	4¼	9½	4⅜	5	Venezuelan Petrol	79,600	8⅝	8⅞	6¾	6⅞	— 1⅞
8	4¾	8¼	4⅞	$ 1	Woodley Petroleum	3,800	6¼	8¼	6¼	7⅜	+ ⅜
6	1¾	8⅜	2⅜	25	Y Oil & Gas (new)	2,200	5½	5½	4⅛	4⅛	— 1½

*New High †New Low xEx Dividend

New York Curb Bonds

Week Ending Dec. 7

	High	Low	Last	Ch'ge
Beacon Oil 6s '36	115⅛	110¼	110¼	—2¾
Cities Serv. G 5½s '42	93½	93	93	0
Cities Serv. G Pipe 6s '43	98¾	98½	98½	— ⅛
Cont. Oil 5¾s '37	96½	96½	96½	0
Empire O & R 5½s '42	92¼	92	92	— ½
Galena Oil 7s '30	100⅝	100⅝	100⅝	0
Gulf Oil 5s '37	102	101⅜	101¾	+ ¼
Gulf Oil 5s '47	101¾	101½	101½	— ½
Independent Oil 6s '39	113¼	105	105	+7½
Richfield Oil 6s '41	130	126½	126½	—3½
Richfield Oil 5½s '31	105	102⅝	102⅝	—2⅛
Sun Oil 5½s '39	102½	101	101	—1
Valvoline Oil 7s '37	106½	106½	106½	+2½

New York Bonds

Week Ending Dec. 7

	High	Low	Last	Ch'ge
Assoc. Oil gold 6s	102½	102¼	102¼	—1¾
Atlantic Refg. deb. 5s	101⅝	100	100	—1¼
Barnsdall Corp. 6s	140⅞	130	131	—9¼
Barnsdall Corp. 6s ex-war.	99¼	98	98	—1¼
Cal. Pet. 5s	103⅜	102¼	102¼	— ⅞
Cal Pet. 5½s	104½	104	104	— ½
General Asphalt 6s	110	107½	107½	—3¼
General Pet. 5s	102	101½	101¾	+ ⅛
Humble Oil & Refg. 5s	100½	100	100	— ¼
Humble Oil & Refg. 5½s	102	101¼	101½	— ¼
Mid-Cont. Pet. 6½s	105	105	105	0
Pan Amer. P & T 7s	104½	104½	104½	0
Pan Amer. P & T 6s	106	105	105	—1
Pan Amer P & T 6s	99⅝	96¾	96¾	—2½
Pierce Oil deb. 8s	104⅜	104⅜	104⅜	+ ¼
Prod. & Refg. 8s	111	111	111	0
Pure Oil 5½s	100¾	99⅝	99⅝	—1⅛
Shell Union Oil 5s	98¾	98½	98½	0
Sinclair Con. Oil 7s	104	103	103	— ¾
Sinclair Con. Oil 6½s	102	101¼	101¼	— ½
Sinclair Con Oil 6s D	100⅛	99¼	99¼	—1⅜
SinclairCon.OilCrude5½s	98	97½	97½	— ⅛
Sinclair Pipeline	95½	94¾	95	— ¼
Skelly Oil 5½s	94¾	93½	94	— ¾
S. O. N. Y. 4½s	98⅞	97	97⅝	—1⅛
S. O. N. J. 5½s	112	112	112	—⅞
Union Oil of Calif. 6s A	108⅛	108¼	108¼	—1⅛
Union Oil of Calif. 5s C	100	99½	100	+ ½
White Eagle Oil 5½s	107	105	105	—1½

Oil Dividends

	Amount	Payable	Stock of Record
Barnsdall Corp. q	50c	Feb. 5	Jan. 2
Humble Oil & Refg. q	30c	Jan. 1	Dec. 12
do extra	20c	Jan. 1	Dec. 12
Indiana Pipe Line q	$1	Feb. 15	Jan. 25
do extra	$1	Feb. 15	Jan. 25
Richfield Oil pfd. q	43¾c	Feb. 1	Jan. 5
Salt Creek Cons. q	20c	Jan. 2	Dec. 15
Warner-Quinlan q	50c	Jan. 2	Dec. 12
West Coast Oil pfd. q	$1.50	Jan. 5	Dec. 20
do extra	$3	Dec. 29	Dec. 20

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